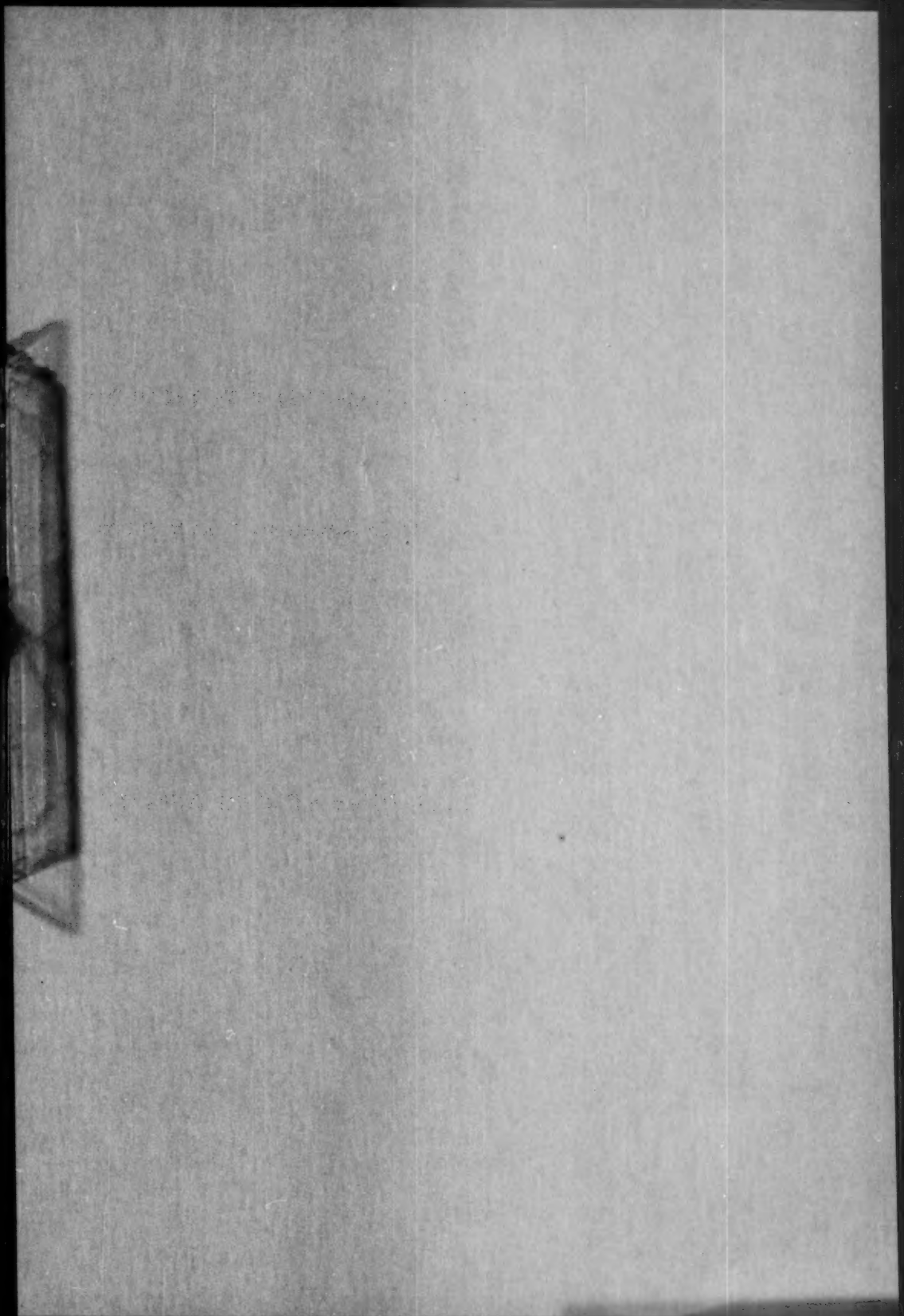


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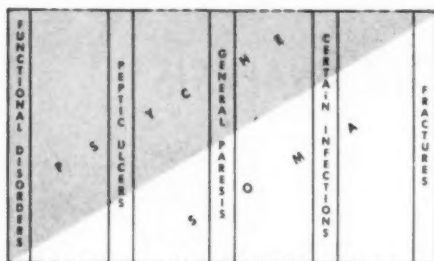
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Therapy for Mixed Somatic and Psychic Complaints

Illness may be divided into:

- a.) that which begins by a disturbance of function with physical breakdown (primary organic).
- b.) that which begins in the psychic or emotional sphere and may eventually lead to physical breakdown (psychosomatic).

Stevenson¹ categorizes diseases according to the relative amounts of *psychic* and *physical* manifestations uncovered during interview with the patient. Burlingame's classification, upon which the following chart is based, evolved from a similar thesis.



Diagnosis: people differ widely in their predisposition toward disturbances of emotional origin. The patient with greater constitutional predisposition develops illness under a relatively low level of stress; whereas the more stable individual can make good adaptation until exposed to a higher intensity of stress. For this reason examination should evaluate:

- A.) Factors such as —
Emotional stability and family history.
Interpersonal relationships.
Life situations at work, in family and social areas. (Stevenson¹)
- B.) Complaints offered by patient —
 { lump in throat, subternal pain,
 palpitation, sweating,
 e.g. { fatigue, sick to stomach,
 diarrhea, menstrual irregularities.
- C.) Complaints elicited by questioning patients—
 { admission of chronic anxiety, irritability,
 e.g. { fear of illness and/or economic loss etc.,
 difficulty in dealing with others.
- D.) Findings on examination of the patient:
muscular tenseness, moist skin, dry mouth, variable pulse rate etc. (Ebaugh²)

Ebaugh² reports that somatic manifestations of such illness are intimately related to the balance between sympathetic and parasympathetic nerve tonus. Since emotions relayed via the hypothalamus, activate both adrenergic and cholinergic discharges, continuous emotional stress and anxiety result in functional disturbances.

Treatment of such conditions, therefore must be based on two methods of management:

- 1.) *psychotherapeutic* — to help patient adjust to stressful situations with minimal emotional trauma.
- 2.) *medicinal* — to relieve the patient's symptomatic distress and concern over his illness, thereby making him more amenable to psychotherapy.

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This combination "... subdues the central, sympathetic and parasympathetic activities in such a manner that the dominance of any one division is gradually decreased to a point where normal balance is re-established."⁴

BIBLIOGRAPHY

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2. Ebaugh, F.: Postgrad. Med. 4: 208, 1948.
3. MacFadyen, B.: Am. Pract. 2: 1028, 1951.
4. Burlingame, C.: Connecticut M. J. 14: 493, 1950.

The Sandoz Scientific Department has prepared a booklet entitled *Atlas of Emotional Disorders*, useful for explaining the basic origin of functional disorders of the various systems. These are available by writing to:

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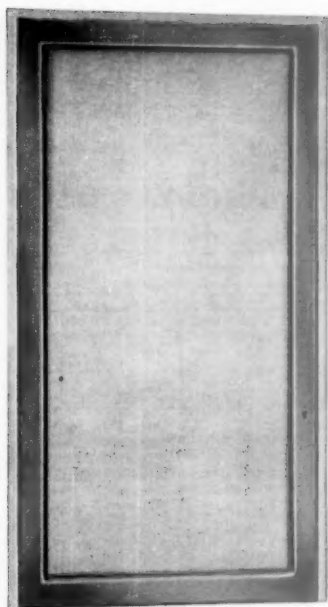
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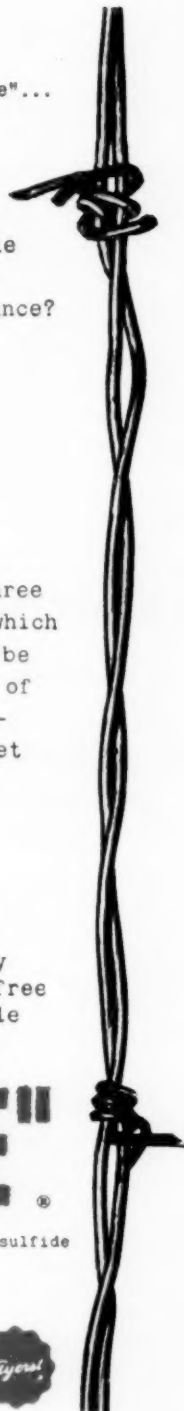
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THE PSYCHOLOGICAL RESPONSE TO ACTH, CORTISONE, HYDROCORTISONE, AND RELATED STEROID SUBSTANCES¹

HOWARD P. ROME, M. D., AND FRANCIS J. BRACELAND, M. D.

Rochester, Minn.

We have been privileged by our colleagues in the Division of Medicine to study more than 100 of their patients in addition to those of our own to whom ACTH, cortisone, hydrocortisone and related steroid substances have been given. As a companion study we have had the opportunity to follow the clinical course of some of their patients with Addison's and Cushing's diseases. The latter group was included in our survey because it represents the spontaneous variants of adrenocortical deficiency and hyperfunction. The physiologic and clinical psychiatric similarities, as well as the differences presented by these two groups of patients, provide a comprehensive frame of reference for investigation of the nature of psychologic responses associated with spontaneous and artificially varied functions of the adrenal cortex.

This report is part of a more definitive study of the many data herewith presented in necessary condensation. The detailed protocols of reports to follow will attempt to document more substantially these tentative conclusions.

The phenomena on which this analysis is based have occurred in patients with such diseases and syndromes as atherosclerosis, Addison's disease, adrenocortical virilism, allergic conditions (bronchial asthma and hay fever), acute disseminated lupus erythematosus, anorexia nervosa, cranial arteritis, Cushing's disease, drug addiction, myasthenia gravis, myotonia congenita, nontropical sprue, periarteritis nodosa, pituitary insufficiency, psoriasis, psoriatic arthritis, rheumatoid arthritis, rheumatic fever, Raynaud's syndrome, scleroderma, terminal ileitis, and ulcerative colitis. In addition we have stud-

ied the effects of some of the hormones given to a small group of patients with catatonic, hebephrenic, and paranoid schizophrenia and involutional depressions.

It is apparent that if these hormones or related steroid substances are capable of inducing psychologic effects by virtue of either a physiologic or pharmacologic action, these effects would be evident in the mood, thinking, or behavioral changes provoked by administration of the substances to a large group of patients.

Also a large series of patients with diverse conditions should provide a background that will allow the specific and the nonspecific effects of these agents to be sorted with greater definition. The relative significance of somatic and psychic factors can be assessed more accurately if they are seen in a spectrum. It is obvious that there are many factors that make unique contributions to the resultant clinical picture. Perhaps by this kind of balancing-out process these can be better assayed.

Such things as the varying influences of the factors of age, sex, marital status, domestic and economic adjustment, educational and social backgrounds, organization of the personality, type of disease, and nature, chronicity, and severity of symptoms can be judged more effectively in a context that provides contrast as well as comparison.

The body of data that constitutes psychosomatic medicine has already crystallized certain notions that the clinical experience of some investigators tends to validate. Future contributions to these data will serve a most useful purpose if they test the limits of these notions. There has been a welter of speculation about the etiologic role that psychic factors play in the structural changes characteristic of certain diseases. The dynamic role that somatic factors take in changing psychologic patterns is said to be less well understood. The simple fact is that the true

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picture is obscured by efforts to isolate either the psychic or the somatic factors from each other and then to objectify them as if they were capable of independent function. It is in this connection that studies of the total effects of ACTH, cortisone, and related steroid substances promise most for clinical psychiatry.

The preliminary report of Hench, Kendall, Slocumb and Polley(1) noted the distinct psychologic change that is part of the clinical effect of administration of ACTH or cortisone. Their report indicated that "an increased mental capacity and activity" was experienced by patients treated with these hormones. They suggested that the euphoria was more than a response to the relief of pain. In a later report(2) they noted that more than 66% of a group of 21 patients experienced "a marked sense of well-being." Boland and Headley(3) observed that almost every patient in their study of effects of cortisone in rheumatoid arthritis "experienced some psychic change." Markson(4) commented on what he called "the typical euphoria," the change in attitude and the renewed hope that typified the improvement demonstrated by his patients. Twenty-six percent of the patients of Soffer and associates(5) with acute disseminated lupus erythematosus showed a general improvement in mood coincident with the disappearance of weakness, joint symptoms, and fever. Seventeen percent experienced a "more striking alteration in mood characterized by severe depression and apathy." Wolfson and his co-workers(6) reported the rapid dissipation of the irritable hypersensitivity associated with acute gouty arthritis after the administration of ACTH. Taylor and Morris(7) have reported 4 marked psychologic disturbances—2 hypomanic reactions, 1 schizoid reaction with catatonic features, and 1 paranoid disorientation—in a series of 5 patients with advanced malignant disease treated with ACTH. They as well as Boland and Headley(3) expressed the feeling that the psychologic phenomena they reported bore some relationship to the dosage, since the untoward reaction disappeared when the amount of the hormone was reduced.

DuToit and Bauer(8) described "a mild maniacal state" and 2 "near-maniacal states"

occurring in patients with chronic ulcerative colitis treated with ACTH. Bordley and his group(9) wrote of a series of 13 patients with lupus erythematosus, asthma, and acute serum reactions, "Most patients experienced mild euphoria at some stage of their therapy while others felt a restless and uneasy overactivity." Wilkins and his associates(10) described the case of a mentally retarded boy aged 2½ years who became "wildly excited and manic" after receiving 50 mg. of cortisone daily for 8 days. Massell and his co-workers(11) encountered 1 "severe mental depression" in a group of 11 patients with acute rheumatic fever and rheumatic carditis. An "improvement in morale and a sense of well-being" have been noted by Goldman and associates(12) in 9 patients with periarthritis nodosa. Loeb(13) reported the development of a severe agitated depression during the course of ACTH therapy; this untoward response continued for several weeks until the institution of electroshock treatment. "Buoyant restlessness" of a degree "more than one would expect in healthy children" has been observed by Stillman and Bayles(14) in patients with Still's disease. They likened the development of "aggressive, overactive and objectionably spoiled behavior" in a boy aged 4 years with juvenile rheumatoid arthritis to the behavior that Selye has described in patients with virilizing tumors of the adrenal cortex. Randolph and Rollins(15) stated that in allergic disease the symptoms of malaise, weakness, ease of fatigue, myalgia, headache, depression, and dulled mental activity were the first to be relieved by ACTH.

A woman aged 28 years with a primary, atypical viral pneumonia, sick but mentally clear, evidenced a sense of well-being within 6 hours after the administration of ACTH. Within 12 hours she was euphoric and feeling well. Subsequently she cried frequently, was quite depressed, and expressed morose apprehension about her ultimate recovery (Finland, Kass, and Ingbar(16)).

Approximately 60% of the patients reported by Hoefer and Glaser(17) experienced an increased feeling of well-being, alertness, some tension and irritability. Seventy-five percent of these were mildly elated or euphoric as long as the effect lasted. In

about 25% of their patients signs and symptoms developed indicative of a psychotic process.

Mach and Barrelet(18) reported the development of a psychotic episode in a patient with polyarteritis treated with cortisone.

Brunsting and his associates(19) reported the occurrence of mental and nervous symptoms in patients with lupus erythematosus.

Since the fall of 1948 when Drs. Hench, Kendall, Slocumb, and Polley(1, 2) called this reaction of patients receiving cortisone to our attention, we have seen a variety of different psychologic responses attend the administration of ACTH and cortisone. They have ranged in degree from a mild increase in the sense of well-being, admitted only in response to direct questioning, to frankly psychotic behavior, mood alteration, and thinking disturbance.

In a preliminary report(20) on 26 patients, we divided the range of responses among 4 descriptive categories. These comprise a gamut of reactions for purposes of general classification. More extensive experience indicates that, whereas several subgrades might be added in the interest of greater definition, these 4 types of reaction formations are prototypical of all the clinical permutations we have encountered. All the patients whose clinical course we have been able to follow personally from the pretreatment period of preliminary study on have experienced some psychologic change concomitant with the administration of these hormones. In this connection, however, it must be emphasized that all the patients who received these agents were sick, many acutely and desperately ill. Obviously their underlying disease was significantly reflected in the findings on the initial psychiatric and psychologic examination(21).

Since July, 1950, when cortisone first was made available commercially through hospitals, we have seen in consultation a few patients who have stated that they have received varying amounts of cortisone and have not been aware of any psychologic change.

Then, too, since the introduction of cortisone for oral use, there have been fewer of the more pronounced reactions following its administration. However, large oral doses of cortisone are given less frequently than in

an earlier period, and except in isolated experimental instances the general trend has been toward a more conservative daily dose (22). Moreover, orally administered cortisone is lost more rapidly from the body than parenterally administered cortisone.

The response classified as grade I encompasses those reactions described by patients in a number of rather typical statements: "I never felt better in my life!"; "I'm on top of the world!"; "I never realized what it was like to feel really well!"; "For the first time in years I feel alive!"; "I feel wonderful!" It is characteristic of these patients to report a sense of stimulation and well-being in these terms. There is a liberal use of the superlative in their descriptions of their current health. They say they feel more vigorous than they "really are"; they feel buoyant; they have less fatigue and are able to concentrate better. Many state that their thinking is accelerated. They claim to be able to do creative thinking not only with celerity but also with better qualitative results than heretofore.

In an attempt to explore more thoroughly the factors responsible for this increased sense of intellectual capacity, we are studying currently this allegedly facilitated intellectual performance. This study will attempt to evaluate objectively the accuracy of these reports and to delineate the significance of such factors as relief of pain, systemic toxicity and fatigue, mood elevation and its effect on the stream of mental productivity.

The most striking response is noted in the sphere of affect. It has been our observation that mood is invariably changed in the direction of elevation. This change seems to be positively correlated with the amelioration or disappearance of the local and systemic symptoms of the underlying disease. However, there are instances in which mood elevation is reported in considerable advance of a remission of physical signs and symptoms (23). As a rule patients with rheumatoid arthritis present parallel improvement in their mood and symptom pictures(2). Patients with such conditions as ulcerative colitis, atherosclerosis, pituitary insufficiency, psoriatic arthritis, and adrenocortical virilism evidence psychologic responses disproportionate to the actual change induced in the affected struc-

tures. This disproportion relates not only to time but also to qualitative change in the disease process.

In general the modal response is one in which mood elevation reflects subjective improvement and attends objective alteration in the underlying pathologic process. The frequency of this response almost compels the conclusion that in large part this is a consequence of the gratification experienced on being granted even a temporary reprieve from painful invalidism(21). Closely allied with this is the factor of relief from symptoms of systemic toxicity, which includes such things as fall in fever, decrease in number of bowel movements, abatement of nausea and decrease in the consciousness of palpitation. There are suggestions(21, 23), however, that the psychologic responses are not wholly the product of the unalloyed emotional experience of beginning convalescence.

The great metabolic shifts that necessarily operate in order to reconstitute well-being seem to influence the body as a whole. The central nervous system, no less than the autonomic nervous system and the endocrine apparatus, appears to be affected physiologically as well as psychologically. Although there is evidence that the influence of these hormones is distributed along a differential gradient—target organs and systems being affected more directly and to a greater extent than other systems—it is apparent that the changes brought about therefrom materially alter the dynamics of the entire organism. It would be singular if the brain, immersed and integrated as it is in this flux, were exempted from participation. Admittedly the particulate physiology of such hypothetical processes is obscure; hence the resort to metaphors and similes by way of substituting verbal description for physiologic dynamics.

A grade 2 response includes the alterations noted in the previous category. It differs in that there is a palpable increase in the kind and amount of responses observed. The mood change that seems characteristic of the influence of these hormones is obvious. These patients are usually effusive and expansive in their affirmation of well-being. They are voluble and often given to hyperbole. Physical as well as mental stimulation

is apparent. They are active to the point of restlessness. Insomnia is a common symptom. Their sleeplessness is refractory to the usual nightly sedative. The increase in motor activity is reflected also in a vastly improved appetite as well as greater muscular strength. It is paralleled by accelerated mental activity. Sometimes this increase in the stream of mental productivity approaches the hypomanic level and there is flight of ideas. This is seen in the written productions of the patients particularly well: lack of precision of expression and deterioration of penmanship. The mood elevation is of a degree sufficient to impair judgment and perspective; often the patients minimize what previously they have clearly understood to be the seriousness of their disease and its expected course. Nurses, friends, and family usually smile when they are asked to give an appraisal of the patient's status, and frequently remark on the gross resemblance of the condition to that of alcoholic intoxication.

One patient summarized his well-being by saying: "It feels as though I've hit the jackpot or just won the Irish sweepstakes—I've never felt this good in my entire lifetime!"

Approximately 60% of the patients to whom cortisone and ACTH have been given show responses grouped in grades 1 and 2.

Although there are some as yet unexplained exceptions, the daily dose and total amount of cortisone used and the rate at which the daily dose is increased or decreased appear to bear a direct relation to the psychologic responses observed(21). The more marked responses are likely to result from a schedule that provides for 100 mg. or more of cortisone daily. Limitation of the daily dose of cortisone to the minimal amount sufficient to allay symptoms of the active inflammatory process of the underlying disease is less frequently associated with untoward psychologic reactions.

The pretreatment condition of the patient, chronicity of the underlying disease, extent of disability, and amount and nature of the pain experienced are valuable aids in the establishment of a base line on a scale of psychologic responses. It goes without saying that the disease for which the ACTH or cortisone is being given has much to do with the initial attitudes of the patient. Any or

all of the constellation of factors that comprise the pretreatment status may be enhanced or minimized in the light of the patient's basic personality. This seems to determine not only the psychologic, symbolic significance that attaches to certain symptoms but also the entire pattern of emotional adaptation to pain, invalidism, the inherent, passive dependence of illness, and the characteristic ego defenses mobilized. While the determining influence of the basic personality is recognized more easily in the reactions graded 3 and 4, on closer examination it operates in a like manner in the first 2 grades.

Grade 3 comprises a wide array of descriptively different response types. As the foregoing indicates, the form these take reflects the ego characteristics of the patient. Particularly the ego defenses characteristic of him under stress determine, as it were, the choice of symptoms. These seem to crystallize into symptom expressions. Consequently every clinical type of psychiatric reaction to stress short of overt psychosis falls by definition within this category.

The sudden change induced by ACTH and cortisone in the pretreatment adaptation of the patient seems to mobilize resources typical of him.

Marked anxiety, either related or unrelated to the underlying organic disease, is evoked occasionally. As in all efforts to ferret out the root causes of anxiety, the superficiality or depth of psychiatric inquiry reveals patterns of varying complexity. But even on superficial examination the anxiety manifested by these patients bears little relation to the current clinical course. Nominally the anxiety is often ascribed to events that patently are façades shielding underlying psychologic conflicts of long duration. Very frequently the anxiety is expressed in the disproportionate and illogical fashion of a phobia. Rumination and obsessional preoccupation are likewise commonly encountered. The content of the anomalies of thinking is understandable only in the light of greater familiarity with the patient and his life history.

Variations in the amplitude of mood excursions seem to be frequent. These are similar to the wide swings of hypomania and

depression. Their pathologic nature is self-evident, and for that reason psychologic responses of this sort have been reported by clinicians with greater frequency than have the other clinical psychiatric reaction types. These patients are profoundly affected either by lethargy, indifference, constant crying, agitation, and feelings of hopeless helplessness or by pronounced excitement, restlessness, and ideational flight. The occurrence of these untoward responses taxes the custodial resources of a general medical service as well as threatens the underlying disease. Regressive thinking and behavior commensurate with this are evidenced by patients whose longitudinal histories reveal schizoid potentialities.

We have the distinct impression that in all these patients these liabilities existed in either a latent or mildly overt form. ACTH and cortisone seem merely to have fulminated, in some fashion not clearly understood, a schizoid, obsessional, or cyclothymic personality organization, as the case may be, into activity.

Approximately 25 to 30% of the patients we have followed have experienced reactions that have been graded 3. The experience we have had over the last year seems to indicate that, excepting in certain diseases such as Addison's disease, this figure is much higher than can be expected. Then, too, modification in the original dose schedule may have had some bearing on this. These include a schedule of gradually increasing doses beginning with 25 or 50 mg. and a similar tapering off at the conclusion of a course of treatment or decreasing the maintenance dose, if the program is to be continued, to the lowest dose consistent with remission of symptoms.

The grade 4 response has been a classification reserved arbitrarily for the grossly psychotic reactions. Here with even greater definition than is apparent in the other 3 grades the prepsychotic personality seems to be of paramount importance in determining the form of the psychotic response. In this group there are represented all the usual psychotic reaction types. Significantly, a large majority of these patients give a history of previous psychiatric illness. This is not necessarily psychotic illness.

Clinical psychiatric experience tends to

support the speculation that such would be the historical background presented by these patients. This is in keeping with the evidence that stress in the form of starvation and dehydration (24), hypoxia (25), and profound temperature change (26), as well as the more usual psychologic conflicts (27), precipitate psychiatric and psychosomatic syndromes in vulnerable persons.

There is a growing body of evidence that elucidates these interrelationships; outstanding examples are the studies of McFarland (28, 29), Keys and associates (24), Selye (30), Wolff (27), and Wolff and others (31).

In this series, grade 4 psychiatric reactions occurred in 10%. Again, this figure has only limited value because of the heterogeneous composition of the series as regards all the factors previously mentioned. Data relating to incidence obviously are valid only if they reflect representative and unselected samples of populations.

The grade 4 psychotic reactions encountered among this group of patients were of unexpectedly brief duration. Almost all tended to subside spontaneously within a few weeks after the discontinuation of the treatment. In this connection subsidence refers to the disappearance of hallucinations, delusions, and extreme variations in mood. Unhappily, the underlying disease that required these agents promptly returned to a pretreatment status in most instances. On such occasions when cortisone was given again, we have witnessed a repetition of the psychiatric events.

In this connection patients with Addison's disease, either untreated or in crisis, showed a greater vulnerability to these untoward responses than the other patients.

COMMENT

In the instance of a physiologic deficiency of adrenocortical function a smaller amount of cortisone seems to be needed to supplement other measures in the re-establishment of normal metabolic balance and consequent remission of symptoms. In order to achieve comparable remissions in patients with diseases that apparently spare the adrenocortical function typically affected by Addison's disease, very much larger doses of cortisone are required.

Sayers (32) has differentiated the physiologic use of cortisone from its pharmacologic use. The former refers to its use in the replacement therapy of a demonstrable deficiency; the latter refers to its empiric use in the treatment of conditions in which there is no demonstrable adrenocortical deficiency. He pointed out the great difference possible in the metabolic responses to the same dose of hormone under varying circumstances of hypercorticism, eucorticism, and hypocorticism, and indicated that the actions of cortisone may be determined by the functional status of the tissue cells.

The same kind of selective sensitivity is encountered, for example, in patients with myxedema, profound reactions attending doses of thyroid that can be well tolerated by the euthyroid patient (33, 34).

The normal subject seems to possess adaptive capacities that inure him to substantial variations in his physiologic balance. In contrast, patients with a metabolic deficiency seem to have lost to a variable degree this capacity to withstand these substantial variations. By virtue of the disease, their total psychophysiologic economy has been adapted to meet imposed demands as efficiently as possible and at the same time to adjust to the limitations of the adaptation itself.

If the final steady state of adaptation that results is maintained for an appropriate period, continued function is possible, albeit restricted. Studies on the nature of the adaptive process have established this correlation of the rate of response with the intensity and the duration of the stimulus (26, 35, 36).

Disease, unlike well-being, is a less stable, uneconomic steady state. Hence the conservative buffer-like capacities explicit in the "normal" homeostatic conditions are lacking in disease. This merely describes the concepts of vulnerability and sensitivity in different terms.

Sudden or great alterations in the steady state of disease can be equated with stress that may exceed the capacity of an already taxed organism to make a smooth, integrated new adaptation. The gradient of response to change under these conditions is irregular therefore. The organism manifests this by hyperirritability or by being refractory.

A familiar example is that of decompress-

sion sickness, the symptoms of which appear when the subject is returned rapidly to a "normal" atmospheric pressure. Similarly, the abrupt lowering of maintained high blood glucose concentration in a diabetic patient is likely to induce hypoglycemic-like symptoms at levels far in excess of what is usually thought "normal."

Although it would appear that phenomena of this sort might account for the fulminated psychologic responses seen, there are other data that have to be noted.

We have observed on repeated occasions that the same grade of psychologic response in a given patient receiving cortisone can be reproduced with repeated courses of cortisone, with ACTH, or with hydrocortisone (compound F).

The psychologic responses that follow the administration of these steroids and ACTH are not commonly associated with demonstrable metabolic changes such as a pathologic shift in electrolyte balance, which of themselves could account for the resulting psychiatric symptomatology. On the other hand we have encountered instances of disrupted electrolyte balance, particularly that associated with a low serum potassium level, presumably induced by cortisone, in which there were psychologic responses of grades 3 and 4. The prompt disappearance of these signs and symptoms on the administration of potassium would indicate that cortisone was involved only indirectly. Others have reported similar findings (37, 38).

Electroencephalographic changes in the nature of rhythm and frequency modification, which are suggestive of generalized metabolic alterations that cannot be otherwise detected, will be reported elsewhere. The mechanism by which these changes are produced is not clear at this point. They would seem to indicate that at least some of the psychologic responses observed are mediated by direct changes in the cellular function of the central nervous system.

In contrast with this bit of evidence and perhaps because of it, cortisone and ACTH have the capacity to modify ego defenses as they are revealed by psychiatric examination. These modifications are reflected in the altered clinical psychiatric picture. It seems that access is easier to psychic material heretofore

repressed. Psychologic conflicts, which have been latent perhaps but in any case essentially asymptomatic, are exacerbated, with the resultant production of a train of new symptoms. In the absence of more explicit information, it is assumed that the potentiality of these existed before treatment was undertaken. In part this hypothesis is based on unequivocal evidence that those conflicts, which have been only partly resolved and hence are responsible for reasonably well-managed symptoms, can be fulminated in intensity following the administration of cortisone and ACTH. It is as if the induced internal environmental stress of the change provoked by cortisone were sufficient to vitiate hitherto satisfactory defenses. Not only is this apparent in the conscious productions of the patient as well as in his psychiatric signs and symptoms, but also it is attested by the dramatic changes in his dreams and fantasies.

The symbolic meaning of the patient's symptoms is of relevance. It is transparent that the abrupt removal of symptoms that have served the purposes of primary and secondary gain will of itself tax the resources of psychologic adaptation. Cortisone and ACTH as potent pharmacologic agents are prone, therefore, to jeopardize a precarious stability by depriving the patient of the keystone of his psychologic defense. This, coupled with their ability to modify ego defenses, is often sufficient to precipitate an acute psychologic decompensation.

Then, too, sudden precipitation into what promises or threatens to be well-being for the psychologically unprepared patient can evoke considerable anticipatory anxiety. Especially is this so in the case of a patient confronted with the responsibility of interpersonal relationships from what he views as the disadvantageous position of a seemingly healthy, presumably capable individual.

For those persons whose personality resources predispose them to a low tolerance for pain and tension, there is the potential trauma explicit in an easily established dependence in the sense of habituation.

The production of many of the characteristics of Cushing's syndrome by the protracted administration of large doses of cortisone or ACTH adds another psychologic hazard.

Hench and associates(2) and Sprague and his group(21) in their comprehensive reviews mentioned the production of hirsutism, acne, keratosis pilaris, cutaneous striae, muscular weakness, fat deposits, round face, and the other familiar features of this condition. The patients we have observed in whom these side effects have developed have also evidenced tension, depression, headache, dyspnea, and vague, evanescent somatic symptoms such as dizziness. One has the impression that, although the psychiatric picture that these patients present is a fluctuant one, for the most part it resembles the clinical type of reactive depression. Retardation, with occasional outbursts of agitated restlessness, is a prominent feature, as are irritability, preoccupation, insomnia, and a muted interest in their surroundings. Their mental context centers on their physical person and the vicissitudes of their many symptoms. Their horizon of interpersonal relationships seems concentrically constricted; all of their libido seems invested in personal affairs of the moment. With few exceptions they express their dissatisfactions as an enormously disappointing contrast with their previously "good" condition.

There is reason to suspect that only a small part of this symptom picture can be ascribed to such psychologic factors as concern about facial hirsutism and other changes in physical appearance. Nevertheless these unwelcome features seem to have the same kind of significance as in the complaints of patients with spontaneous Cushing's disease.

We have had the opportunity to follow the clinical course of 10 patients with spontaneous Cushing's disease as a companion study. These findings, as well as those on Addison's disease, will be reported in detail elsewhere. Suffice it to say that, of the group, 3 were grossly psychotic while the remaining 7 reported a preponderant sense of depression, the feeling of constant irritability that was difficult to control, pronounced anxiety, somatic preoccupation, with a commensurate decrease of interest in environmental events, and agitation that muscular weakness prevented from being dissipated by activity.

Withdrawal of cortisone or ACTH is fraught with 2 rather formidable complications. The first is incident to the feeling of

exhaustion, asthenia, and unremitting fatigue that presumably is a consequence of temporary suppression of adrenal cortical function (2, 21). The duration of this "letdown" is variable and seems to be a function of the rate at which the adrenal cortex can respond. The second aspect of withdrawal of cortisone is especially traumatic, since it often appears at a time when the patient is least well able to accept its implications; this is the return of the symptoms of the underlying disease. The patient is again a painful, disabled invalid. Among the obvious disadvantages of this state of affairs is that in contrast to the usual relatively slow onset of his initial disease he is now, after having been asymptomatic, precipitated into the disquieting experience of full-blown sickness. Here, too, the rate at which these changes come about appears to be of major importance.

In conclusion, it has become evident to everyone who has had experience with ACTH, cortisone, and related agents that they are potent substances with widespread direct and indirect effects. The number of clinical conditions for which they are being used involves a large group of patients who are otherwise foredoomed at least to prolonged convalescence and incidentally to much psychologic trauma. Even though it is generally agreed that these agents are not a panacea, nevertheless the discovery of their clinical application is a large step forward in the progress of medicine. Like all advances this one is not without its hazards. The clinical psychiatrist is required to be familiar with some of these, for many are within his sphere of competence. There are implications for the future of psychiatry that promise much. Here for the first time are agents that can modify ego defenses without affecting consciousness. Here for the first time are agents that affect the vital physiologic buffers that have to do with adaptation. These facts bespeak clinical as well as theoretic potentialities for the long-awaited reunion of psychology and physiology.

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DISCUSSION

DR. THEODORE LIDZ (New Haven, Conn.).—The paper has performed the important function of calling attention to the emotional disturbances that occur in patients treated with either ACTH or cortisone. Soon after the therapeutic use of these hormones began, repeated references appeared concerning dramatic mood changes and the occurrence of psychoses during or after treatment. However, there are also many reports of the use of these hormones in long series of patients that fail to mention any remarkable changes in mood, or that specifically state that such changes are not striking.

The differences in experience at various centers are not easily analyzed. Rather than discuss this paper I will utilize the time to describe briefly the experience with these hormones at the Johns Hopkins Hospital, which stands in marked contrast to what has been reported by Dr. Rome and Dr. Braceland. About 18 months ago an experimental study was instituted because of the scattered reports concerning treatment. The findings are reported more fully elsewhere.² Fifteen patients were followed through 14 courses of treatment with ACTH and 9 courses of cortisone therapy. Placebos were given before and after treatment to try to mask from the patient and the investigators what hormone was being used and when it was started and stopped. Two psychiatrically trained interviewers talked with the patients each day before, during, and after the treatment period, and filed separate reports of their findings and impressions. Each patient was tested by means of the Kohs Block Test, and Rorschach studies were done before treatment, during the height of the therapeutic response, and after treatment. There is ample evidence that any toxic degradation of mentation would be reflected in the scores of the Kohs test. The Rorschach was utilized both as a check on the Kohs test and as a check upon the impressions of the interviewers. Electroencephalographs were made at frequent intervals on 8 patients. The series was comprised of 10 patients with asthma, 3 with disseminated lupus erythematosus, 1 with rheumatoid arthritis, and 1 with periarteritis nodosa. Neither hormone was utilized over a very prolonged period. The dosage of cortisone was often heavy but was never continued longer than 20 days in a single course. ACTH, though often started in heavy doses, was tapered off in most instances by diminishing the amount every 2 days. Prolonged treatment was given in discrete courses

rather than continuously. Such therapeutic regimens are now followed in many hospitals.

The observations were not dramatic. During 9 courses of cortisone mood changes in the direction of euphoria considered even proportionate to the physical improvement occurred in but 1 patient. One patient with disseminated lupus developed an organic psychosis with lasting neurologic signs, but organic psychoses of a similar type occur not infrequently during the course of this disease. The findings with ACTH were not striking. Seven patients showed mild to moderate euphoria. Another 2 may have developed transient elation, but the elation was difficult to evaluate in both instances, for 1 patient had become more elated while on a placebo and the other was an unstable woman who had similar episodes outside of treatment. One patient became definitely elated during the first few days of treatment; he had been virtually moribund from periarteritis nodosa, and the sudden improvement was little short of miraculous. It may be important to note that he had severe brain damage with intellectual impairment from the disease. During subsequent courses of treatment with ACTH when improvement was not dramatic no elation was noted.

It is to be pointed out that in a series of 15 patients who received 23 courses of treatment 3 psychoses occurred. However, 1 was the organic reaction of the patient with disseminated lupus. The second was a paranoid depression that occurred in the patient with periarteritis nodosa, at a later period of hospitalization completely unrelated to the hormonal therapy. The third patient, actually not included in this series, was a chronic asthmatic who was addicted to narcotics, who became psychotic several hours before the first injection of ACTH was to have been given. The incidence of 3 psychoses among 16 patients is a rather striking figure, but aside from the organic psychosis they were clearly not related to the hormonal therapy.

I have tried to furnish an impression of the type of study made, and will now offer a brief summary of the findings.

1. With treatment of the intensity and duration outlined, neither hormone produced a measurable toxic degradation of mental functioning.

2. Emotional changes occurred only in patients who showed considerable striking physical improvement.

3. Cortisone had little if any euphorogenic effect. Four asthmatic patients treated with both hormones showed little euphoria while treated with cortisone, which had helped the asthma but little, and with a good response to ACTH they all became euphoric. Other protocols showed mood changes along with real or subjective improvement in response to placebos.

4. Electroencephalographic changes occurred in all 8 patients studied, but there was a negative correlation between these changes and alterations in mood and behavior.

5. The effect of the hormones in brain-damaged patients may be different, as suggested by George

² Lidz, T., Carter, J. D., Lewis, B. I., and Surratt, C. The effects of ACTH and cortisone on mood and mentation. *Psychosom. Med.*, in press.

Thorn. A review of the literature suggests that many of the psychoses reported have occurred in patients with collagen diseases, particularly with disseminated lupus.

6. Many of the patients in our study were extremely unstable persons and it is of interest that no really untoward reactions to the hormonal therapy occurred. Perhaps it should be added that over 350 patients suffering from diverse illnesses have been treated with well over 500 courses of these hormones at the Johns Hopkins Hospital and, aside from 2 or 3 patients with disseminated lupus and 1 with generalized sarcoidosis, none have suffered psychotic reactions. Startling or disturbing mood changes have been few.

The differences between our experiences and those of Drs. Rome and Braceland are not readily analyzed. The most probable reason, which needs careful study, may be the difference in intensity and duration of treatment. However, a review of the literature suggests that this is not the only factor. Potassium deficiency due to negative potassium balance did not occur in our patients but has been found to account for some psychotic reactions. The type of illness treated may be important: the sudden removal of the defense provided by

chronic illness may precipitate serious emotional disturbances, particularly in arthritics. The attitude of the therapist and the expectations aroused in the patient may be important. At the Johns Hopkins Hospital the patient was almost always informed that the treatment was experimental and would probably give but transitory benefit, though it was hoped that the response would be more lasting. These and other aspects of the treatment require further careful evaluation.

It is extremely important for the whole area of psychosomatic interrelations that carefully controlled studies be made concerning the effect of the hormones on mood and behavior before we start considering how these hormones affect mood; before we know that reasonable amounts of these hormones actually produce such effects. It is to be remembered that there are other hormones and many drugs that will do something to the psychic equilibrium or to mental functioning if given in excess. As Drs. Rome and Braceland have emphasized, these 2 hormones clearly seem to be of major importance in the mechanisms by which emotional stress leads to structural change, and are therefore worthy of our most careful study.

NOR-EPINEPHRINE-LIKE AND EPINEPHRINE-LIKE SUBSTANCES IN PSYCHOTIC AND PSYCHONEUROTIC PATIENTS¹

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AND

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In the course of a routine test on the autonomic nervous system (13-15), which utilized the blood pressure responses of the patients to adrenergic stimulation (intravenous epinephrine) and cholinergic stimulation (intramuscular meholyl), Funkenstein and Greenblatt (12) found that psychiatric patients with elevated blood pressures could be divided into 2 groups: one in which meholyl effected a marked fall in the blood pressure, which persisted through a 25-minute observation period; and another in which the drug caused only a slight fall in blood pressure, with the preinjection level being reached within the 25-minute observation period. These reactions were similar to those obtained following meholyl in healthy normotensives whose blood pressure was first elevated by intravenous infusions of epinephrine and nor-epinephrine respectively.

It is well established that the adrenal medulla secretes at least 2 substances, epinephrine and nor-epinephrine. For many years evidence for the secretion of epinephrine has been accumulated, principally as a result of the work of many investigators, of whom Cannon (5) was the best known.

Cannon and Rosenbluth (6) offered convincing proof that there were sympathetic nervous system transmitters other than epinephrine and these they named Sympathin E and Sympathin I. In 1948, Tainter, Tullar,

and Luduena made the optically active form of nor-epinephrine, which differed chemically from epinephrine in that it lacked a methyl radical. Since then Page, Taylor, and Prine (30), Bacq and Fischer (4), Goldenberg, Faber, Alston, and Chargaff (16), and others have shown that nor-epinephrine was also secreted by the adrenal medulla. With the availability of this substance for experimental purposes, its physiological effects are being rapidly elucidated. The majority of physiologists today believe that nor-epinephrine and the Sympathin E of Cannon are identical (4, 19).

Epinephrine and nor-epinephrine have widely different physiological effects. The contrast between these effects may be seen in Table 1.

Hickam, Cargill, and Golden (23) found that healthy individuals who reacted to stress with elevation of their blood pressure showed one of two physiological mechanisms.

One group of subjects showed an elevated blood pressure associated with an increased cardiac output, a decreased peripheral resistance, and an increased pulse. The other group showed an elevated blood pressure associated with an unchanged or decreased cardiac output, an increased peripheral resistance, and a decreased pulse.

Goldenberg, Pines, Baldwin, Greene, and Rog (17) showed that, while infusions of epinephrine and nor-epinephrine both produced elevations of blood pressure, the mechanisms of these rises were entirely different.

During the infusions of epinephrine there was an increased blood pressure, an increased cardiac output, a decreased peripheral resistance, and an increased pulse. During the infusion of nor-epinephrine there was an increased blood pressure, an un-

¹ Read at the 107th annual meeting of The American Psychiatric Association, Cincinnati, Ohio, May 7-11, 1951.

From the Department of Psychiatry, Harvard Medical School and the Boston Psychopathic Hospital. The research reported in this article was made possible (in part) by a grant from the Supreme Council 33rd Scottish Rite, Northern Masonic Jurisdiction, U. S. A., through the National Association for Mental Health. Lydia Meade, R. N., was technical assistant. Nor-epinephrine and epinephrine were supplied by Winthrop-Stearnes Co. Mecholyl was furnished by Merck and Company.

changed or decreased cardiac output, an increased peripheral resistance, and a decreased pulse.

It can readily be seen that the 2 patterns of response found by Hickam *et al.* (23) in their subjects were entirely similar to those found by Goldenberg *et al.* (17) by the infusion of epinephrine and nor-epinephrine.

Funkenstein (10) studied students during and after a life situation that the students interpreted as stress-inducing. The blood pressure was obtained by the cuff and auscultatory method, the cardiac index and pulse by a cardioballistograph, and the over-all pe-

marked fall in blood pressure following intramuscular mecholyl, with a failure of the blood pressure to return to the preinjection level within the 25-minute observation period; in contrast to this, nor-epinephrine-like elevations were associated with a slight fall in blood pressure following mecholyl, with a return to the preinjection level within the 25-minute observation period. Comparison of the 2 groups showed a statistically greater "time of homeostasis," "fall in blood pressure," and "area" in the epinephrine-like than in the nor-epinephrine-like blood pressure elevations (12).

TABLE 1

CONTRAST BETWEEN EFFECTS OF EPINEPHRINE AND NOR-EPINEPHRINE

	Epinephrine	Nor-epinephrine
Cardiovascular system (17)		
Blood pressure	+++	+++
Pulse	+++	= or (-)
Cardiac output	+++	= or (-)
Peripheral resistance	(-)	+++
Metabolized in body (30)	Quickly	Slowly
Blood sugar (24, 26)	+++	+
Effect of mecholyl (12)	Neutralizes	Neutralizes for short time
Stimulation of anterior pituitary to secrete ACTH (27, 41)	+++	0
Stimulation of central nervous system	+++	+

ripheral resistance was calculated from the other data. He found that, when the blood pressure elevation in response to the stress-inducing situation was principally due to an increased cardiac index (epinephrine-like effect), mecholyl reduced the blood pressure markedly during a 25-minute observation period. In contrast to this, among the students in whom the elevation of blood pressure in response to the stress-inducing life situation was principally associated with an increased peripheral resistance (nor-epinephrine-like effect), mecholyl reduced the blood pressure slightly, and in all instances the preinjection level was reached within the observation period.

On the basis of this experimental work, and the infusion experiments with epinephrine and nor-epinephrine referred to earlier in this paper (12), intramuscular mecholyl seems a reliable test of the mechanisms of an elevated blood pressure. Blood pressure elevations associated with an epinephrine-like substance were characterized by a

This paper is a report on psychiatric patients with elevated blood pressures who, on the basis of the mecholyl test, showed evidence of oversecretion of epinephrine or nor-epinephrine. These two physiological types were studied in relation to diagnosis and prognosis with electric shock treatment.

METHOD

This study was based on an original group of 121 patients who fulfilled the criteria of an elevated blood pressure (140 mm. Hg. systolic or more after the patient had lain supine for at least 30 minutes under basal conditions). They were drawn from a larger group of 508 routine admissions to the Boston Psychopathic Hospital.

Twenty-one cases that showed anxiety precipitated by either epinephrine or mecholyl, a chill after the injection of mecholyl, or on clinical study showed evidence of cardiac, kidney, or cerebral disease were eliminated from the study. Those with precipita-

ble anxiety or a chill were eliminated because of our previous experience of patients with this type of autonomic response to electric shock (14). Of the remaining 100 cases, 63 cases received electric shock and were thus the basis for the present paper. There were 37 males and 26 females. The average age was 37.6 with a range from 17 years to 60 years.

The physiological tests were administered to the psychiatric patients with elevated blood pressures and, on the basis of their blood pressure responses to mecholyl, they were divided into 2 groups: in the first, there was a marked fall in blood pressure after the injection of mecholyl with a failure of the blood pressure to return to the pre-injection level within the 25-minute observation period; the second group included those in whom there was a slight fall in blood pressure following the injection of mecholyl, and a return of the blood pressure to the preinjection level within the 25-minute observation period. These 2 groups were then compared as to diagnosis and clinical outcome with electric shock treatment.

ADMINISTRATION OF THE TEST

The technique used was the same as that reported in detail in a previous paper of ours (15).

MEASURES

Following the performance of the physiological tests as described, graphs were constructed from the data with time as the abscissa and the systolic blood pressure as the ordinate. Only the basal blood pressure as a continuous line and the systolic blood pressure reaction after mecholyl were charted (Fig. 1).

1. *Time of Homeostasis*.—This was the time the preinjection level of blood pressure was reached following the injection of mecholyl. If it was not reached within the 25-minute observation period, it was scored "greater than 25."

2. *Area*.—This was the number of squares between the line representing the basal blood pressure and the line representing the systolic blood pressure taken at 1-minute intervals after the injection of mecholyl (on the

graph paper, with .25 inch squares, each square representing 6 mm. Hg. systolic blood pressure and 1 minute of time).

3. *Fall*.—This was the difference between the basal blood pressure and the lowest blood pressure reading obtained after the injection of mecholyl.

Figure 1 shows graphically how these measures were obtained.

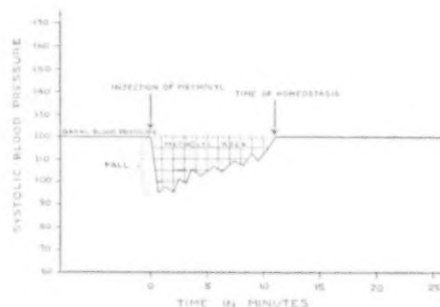


FIG. 1.—A typical graph of the mecholyl reaction and various measures used.

DIAGNOSTIC AND PROGNOSTIC MEASURES

In comparing the physiological variables with the diagnoses of clinical outcomes with electric shock treatment, the following criteria were used:

1. *Diagnostic Criteria*.—This was the final diagnosis made at the time of the patient's discharge or transfer from the hospital. It was made by the clinical director of the hospital, who took no part in the experimental work.

2. *Outcome with Electric Shock*.—Cases were marked "improved" or "unimproved" according to the following criteria: *improved* if the patient left the hospital within a month of the last electric shock treatment and remained out of the hospital at least a month; *unimproved* if the patient was not suitable for discharge from the hospital within a month without other somatic treatment or, if discharged, returned within the month.

RESULTS

The cases fell into 2 groups or types on the basis of the reaction to mecholyl: (A) those in whom the systolic blood pressure failed to reach the preinjection level within

the 25 minutes after the injection of mecholyl, and (B) those in whom the systolic blood pressure reached the preinjection level within 25 minutes after the injection of the mecholyl. (Type A reaction on the basis of previous studies suggested excessive secretion of an epinephrine-like substance, and Type B reaction suggested excessive secretion of a nor-epinephrine-like substance.) (See Fig. 2.)

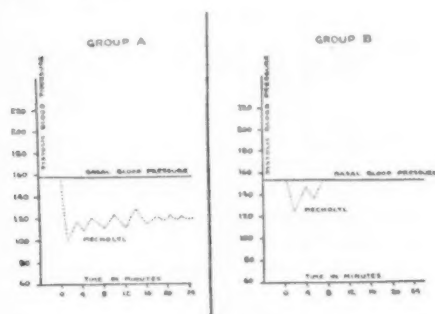


FIG. 2.—The typical reaction in the Group A and Group B patients.

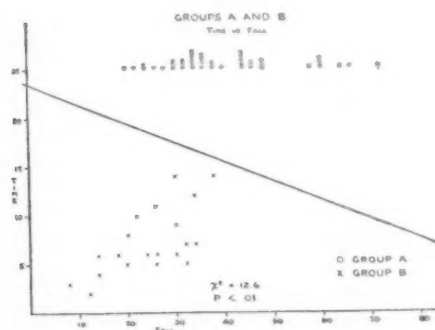


FIG. 3.—Plotting of the 2 groups according to time and fall. This shows 2 distinct populations.

Type A reactions, by definition, showed a time of homeostasis in excess of 25 minutes. The Type B cases showed a mean time of homeostasis of 7.47 minutes, with a range from 2 to 14 minutes.

Figure 3 shows a plotting of the time versus the fall for the 2 types. It can easily be seen that the cases are grouped in the graph into 2 distinct clusters, indicating that we are dealing here with 2 populations. Table 2 shows a chi-square as a test of differentiation

between these 2 types on the basis of these 2 variables, showing these differences to be significant at better than the .01 level.

Figure 4 shows a plotting of the time ver-

TABLE 2

STATISTICAL ANALYSIS OF DATA IN FIGS. 3, 4, AND 5, WITH A *T* TEST OF THE DIFFERENCES OF THE MEANS

Groups A and B

1. Test of Independence		χ^2	<i>P</i>
A. Time vs. Fall	=	12.6	< .01
B. Time vs. Area	=	147.05	< .01
C. Fall vs. Area	=	29.97	< .01
2. Critical Ratio ($D/\sigma D$): Test of Significance of Difference between Means *			
A. Fall			
Mean	Group A	Group B	
	40	24.5	
σ	12.5	8.1	
σM	1.9	1.8	
$D/\sigma D = 5.92$ ($\sigma D = 2.62$)			
B. Area			
Mean	93.3	14.7	
σ	48	10.5	
σM	7.4	2.3	
$D/\sigma D = 10.14$ ($\sigma D = 7.75$)			

* Since a critical ratio of 3 is interpreted to mean virtual certainty, we can be highly confident that a true difference exists between the means of the 2 groups with respect to both fall and area.

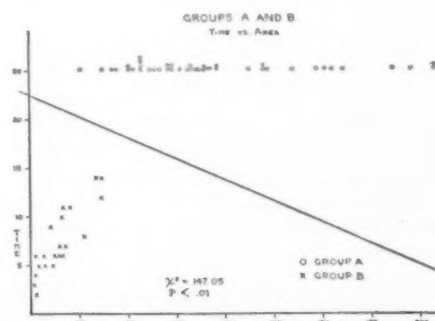


FIG. 4.—Plotting of the 2 groups according to time and area. This shows 2 distinct populations.

sus the area. Here too, it can easily be seen that the cases are grouped in the graph into 2 distinct clusters, indicating that we are dealing with 2 populations. Table 2 shows the chi-square of this differentiation to be significant at better than the .01 level.

Figure 5 shows a plotting of the fall versus the area. Again, we find 2 clusters, and chi-square as shown in Table 2 as a test of

differentiation shows this to be significant at better than the .01 level.

As a final test to prove in still another way that here we were dealing with two distinct populations, the significance of the difference in the means was computed by means of critical ratios. As shown in Table 2, these differences were again found to be significant.

These statistics enable one to say with a high degree of confidence that Type A and Type B are distinct populations.

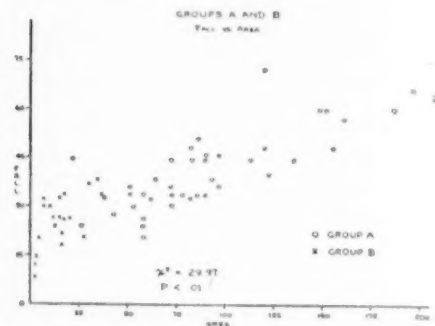


FIG. 5.—Plotting of the 2 groups according to fall and area. This shows 2 distinct populations.

TABLE 3

RELATIONSHIP OF AUTONOMIC REACTION TO
DIAGNOSTIC CATEGORY

Diagnosis	Group A*	Group B*
Dementia præcox	8	16
Manic-depressive	16	3
Involuntal psychosis	16	1
Psychoneurosis	1	1
Alcoholic psychosis	1	0
	42	21

* Group A is interpreted to indicate excessive secretion of an epinephrine-like substance and Group B a nor-epinephrine-like substance.

DIAGNOSIS AND PROGNOSIS

The two types, A and B, were then compared with the clinical diagnosis and clinical outcome with electric shock therapy.

Table 3 shows the diagnosis in relationship to type. It can be seen that the great majority of the Type A cases, 32 out of 42, was composed of the manic-depressed and involuntal psychoses. In contrast to this, the majority of Group B cases was diagnosed dementia præcox.

Table 4 shows the clinical outcome of the cases with electric shock treatment. Thirty-nine of 42 cases of Type A improved with electric shock. Only 3 of 21 cases of Type B improved with electric shock. In other words, 93% of the Type A cases responded to electric shock therapy. This was significant at better than the .01 level.

Table 5 shows the relationship of diag-

TABLE 4

IMPROVEMENT WITH ELECTRIC SHOCK THERAPY
ACCORDING TO PHYSIOLOGICAL GROUPS

	Group A*	Group B*
Improved	39	3
Unimproved	3	18
Total	42	21

* Group A is interpreted to indicate excessive secretion of an epinephrine-like substance and Group B is a nor-epinephrine-like substance.

$$\chi^2 = 38.7$$

$$P < .01$$

TABLE 5

IMPROVEMENT WITH ELECTRIC SHOCK THERAPY
ACCORDING TO DIAGNOSIS AND PHYSIOLOGICAL
GROUPS

Diagnosis	Group A*		Group B*	
	Im- proved	Unim- proved	Im- proved	Unim- proved
Dementia præcox	7	1	1	15
Manic-depressive	15	1	2	1
Involuntal psychoses	15	1	0	1
Psychoneurosis	1	0	0	1
Alcoholic psychosis	1	0	0	0
Totals	39	3	3	18

* Group A is interpreted to indicate excessive secretion of an epinephrine-like substance and Group B a nor-epinephrine-like substance.

nostic category to clinical outcome with electric shock treatment. Especially striking in this table were the results in cases diagnosed dementia præcox, in that 7 of 8 with a Type A response improved with electric shock, whereas only 1 of 15 cases diagnosed dementia præcox who were classified as Type B responded to electric shock. The response to electric shock as seen in this table is more closely related to autonomic group than diagnostic category.

DISCUSSION

The data clearly showed a marked difference in the response to electric shock treat-

ment of 2 types of cases classified on the basis of their blood pressure reaction to mecholyl. Of the patients with elevated blood pressures readily reducible by mecholyl throughout the observation period, Group A (interpreted on the basis of previous experimentation (10, 12) as indicating excessive secretion of an epinephrine-like substance), 93% responded to electric shock treatment. In striking contrast to this, of the patients with elevated blood pressures that were not readily reduced by mecholyl, Group B (interpreted on the basis of previous experimentation (10, 12) as indicating excessive secretion of a nor-epinephrine-like substance), only 14% recovered with electric shock therapy. This was statistically significant at better than the .01 level. When the 2 types were compared on the variables of "area" and "fall" they were shown to be significantly different at better than the .01 level (Table 2). Meduna and McCulloch (29) found that patients with increased sympathetic tension responded best to somatic therapy.

Prediction of the clinical response to electric shock treatment made on the basis of the physiological reactions (*i.e.*, Type A or B) was more reliable than prediction made on the basis of any single diagnostic category or group of diagnostic categories. It is well documented that manic-depressive cases and involutional psychoses show the best response to electric shock treatment. The great majority of the manic-depressive and involutional psychosis cases in this study (32 of 36) showed evidence of excessive secretion of an epinephrine-like substance. In contrast to this, only 8 of the 24 schizophrenic patients showed evidence of over-secretion of an epinephrine-like substance. Clinically, 7 of the 8 cases of dementia praecox with autonomic responses similar to those of the manic-depressive and involutional psychoses were of the "turmoil" or schizo-affective variety.

Cannon (5), as a result of his work principally with cats, described a reaction associated with excessive secretion of epinephrine, which he named the "fight-flight" reaction. Since evidence of oversecretion of an epinephrine-like substance in this series of cases was found predominantly in the de-

pressions, particularly the manic-depressive and involutional types, we wish to suggest that the majority of cases in these diagnostic categories represents in man the counterpart of Cannon's fight-flight reaction in cats. Other evidence that the majority of depressions is usually associated with an excessive sympathetic tension (epinephrine-like substance) can be seen in the following reports, none of which was interpreted by the individual investigator as indicating increased activity of the sympathetic nervous system.

Strongin and Hinsie (39) reported that during depressions the secretion of the parotid gland decreased markedly; when the depression lifted, the amount of secretion was found to be within the normal limits. Henry (21) showed a loss of tonus and a decrease in peristalsis of the gut in patients with depressions; when the mental illnesses were over, the tonus and peristalsis returned to normal. On the basis of the work reported in this paper, decreased parotid secretion, decreased peristalsis and tonus of the gut could all be explained by excessive secretion of epinephrine. The person who is mobilized with a fight-flight reaction does not sleep. The threat to the person here could be the punishing superego.

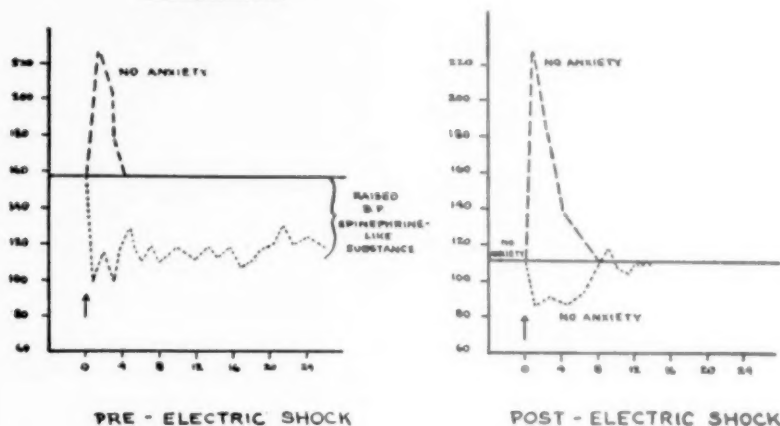
The objection might be raised that the majority of involutional depressions and manic-depressive depressions do not have elevated blood pressures. This depends in large measure on the definition that one uses of an elevated blood pressure. In the great majority of cases, with depressions the blood pressure was lower after the depression was terminated, although the elevation during the depression may still be within the so-called "normal" range (14). This does not imply that all depressions show this type of autonomic response. However, when this was found to be the case, they usually did not improve clinically with electric shock treatment (15).

The view that the depression, particularly of the manic-depressive or involutional type, may represent the counterpart of Cannon's fight-flight reaction in man is at variance with the popularly accepted idea that the anxiety neurosis represents Cannon's fight-flight reaction. In a careful search of the literature, we are unable to find any objective physiological evidence that this is so. As

previously reported by us (13), the majority of anxiety neurotics showed no elevation of their blood pressure at rest but, when epi-

dence of oversecretion of an epinephrine-like substance, epinephrine itself failed to induce physiological changes that the patients in-

DEPRESSION



ANXIETY NEUROSIS

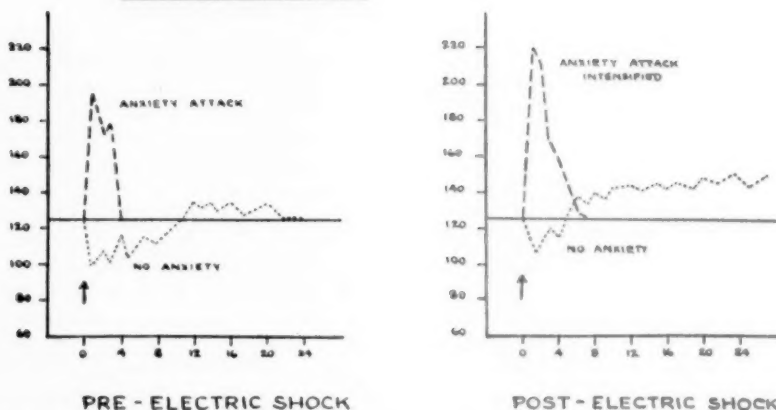


FIG. 6.—The contrast between the reaction to electric shock therapy of the anxiety neurotic patient, in whom the precipitable anxiety becomes more severe, and the depressed patient, in whom the evidence of excessive secretion of epinephrine disappeared after electric shock. In the first instance the patient becomes worse; in the second the patient improves.

nephrine or mecholyl were given, physiological changes were induced that they interpreted as anxiety. Lindemann and Finesinger (25) obtained similar results. In the cases that were depressed and showed evi-

terpreted as anxiety. The contrast in these two reactions may be seen graphically in Fig. 6. Another striking difference in these 2 types of cases was their response to electric shock treatment. Cases that showed evidence

of excessive secretion of an epinephrine-like substance usually improved with shock treatment with a lowering of the blood pressure, whereas cases in which anxiety was precipitated by epinephrine usually became worse with electric shock, with a subsequently higher basal blood pressure(14). The difference in these responses may be seen in Fig. 6. Previously we have reported(15) that insulin treatment will decrease the ability of epinephrine to precipitate anxiety, often negating this property of the drug. We have no explanation of this phenomenon, except to point out and show the need for further research into these reactions.

Rado's studies of depression(32, 33) are relevant to these findings. He has expressed the idea that the physiologic phase of fear fully and openly expressed and outwardly discharged would prove to be different from the physiologic phase of repressed fear(34).

This work gives rise to the interesting speculation that one of the principal mechanisms of action of electric shock therapy is by stimulation of the parasympathetic nervous system with an associated release of acetylcholine. Data that support this idea may be found in the work of other investigators(1, 2, 3, 7, 9, 18, 20, 35, 36).

The experimental work we have done(12) on these 2 substances involves much reasoning by analogy, and so at the present time we prefer to use the terms *epinephrine-like* and *nor-epinephrine-like* in describing these findings. Nothing in our experiments would contradict the hypothesis that these substances are epinephrine and nor-epinephrine, but there is no direct chemical test at present for either epinephrine or nor-epinephrine and one is able only to study the indirect physiological effects of these substances. This follows the line of almost all investigation in this field, including animal experimentation.

Secretion of nor-epinephrine-like and epinephrine-like substances is not peculiar to mental illness. Funkenstein and Greenblatt(12) in a study of college students during psychological stress were able to show the same 2 patterns in the majority of students when subjected to psychological stress.

That other factors play an important part in elevated blood pressures we are well

aware, as pointed out in relation to the kidney by Pfeiffer and Wolff(31), the posterior pituitary by Heinbecker(22), and the adrenal cortex by Selye(38). We, however, have been interested in the acute reaction to stress in which the adrenal medulla is often the primary link, rather than the much slower effects of the adrenal cortex as pointed out by Selye(38).

U.S.P. epinephrine is obtained from the adrenal medulla of cattle. It is a mixture of epinephrine and nor-epinephrine in varying proportions(16). Since much of the early work on the adrenal medulla was done with this type of epinephrine, much of this work needs repeating. In all of our recent work we have used synthetic laevo epinephrine. This raises the interesting problem of whether or not man secretes varying amounts of these substances in a mixture rather than epinephrine or nor-epinephrine alone. We have no answer to this except to suggest the 3 obvious possibilities.

We wish to point out that the cases reported in this paper make up a small part of the total number of psychiatric patients. As pointed out previously, only 100 of 508 such patients fulfilled the criteria for excessive secretion of one or other of these substances. Some of the other cases may be showing an excessive secretion of either of these substances, but unless there is a marked elevation of blood pressure they cannot be detected. We have reported extensively on other types of autonomic responses in psychiatric patients(13-15), including one type of autonomic response entirely different from those reported in this paper, in which there was an associated poor performance on psychological tests interpreted as measuring abstract thinking(28). In cases with evidence of excessive secretion of epinephrine-like or nor-epinephrine-like substances, Meadow and Funkenstein(28) found little evidence of loss of abstract thinking.

The question of the etiology of mental illness may come to the mind of many. As pointed out in our previous papers, none of our work gives any definitive information. We rather look on such studies of the adrenal medulla as a differentiating factor that has wide secondary effects on other physiological, biochemical, and psychological systems, and

these in turn affect the adrenal medulla. It is impossible to say which is primary. It would seem this work is best viewed as a classifying factor and a point of departure for more research.

SUMMARY AND CONCLUSIONS

1. Sixty-three patients with elevated blood pressures who were routine admissions to the Boston Psychopathic Hospital were given a standardized dose of mecholyl intramuscularly. On the basis of their blood pressure reactions to the drug during a stated observation period, the patients could be divided into 2 groups: (1) Type A were those in which following the injection of the mecholyl the blood pressure remained below the pre-injection level throughout the observation period. (On the basis of previous experimentation (10, 12) this was interpreted as indicating excessive secretion of an epinephrine-like substance.) (2) Group B were those in which following the injection of mecholyl the blood pressure returned to the preinjection level within the observation period. (On the basis of previous experimentation (10, 12) this was interpreted as indicating excessive secretion of a nor-epinephrine-like substance.) When these 2 groups were compared in regard to 2 other variables, the maximum fall in blood pressure after mecholyl, and the area between the mecholyl reaction and the basal blood pressure, the difference between the types was found to be significant at better than the .01 level.

2. Thirty-nine of 42 cases showing evidence interpreted as indicating excessive secretion of an epinephrine-like substance improved with electric shock therapy. In contrast to this, only 3 of 21 cases showing evidence interpreted as indicating excessive secretion of a nor-epinephrine-like substance responded to electric shock. This was significant at better than the .01 level.

3. The great majority of the cases interpreted as showing excessive secretion of an epinephrine-like substance were diagnosed as manic-depressive or involutional psychosis; whereas the majority of the cases interpreted as showing excessive secretion of a nor-epinephrine-like substance were diagnosed schizophrenia. The response to electric shock followed the autonomic type

rather than diagnostic category, as the majority of the schizophrenic patients who showed evidence interpreted as indicating excessive secretion of an epinephrine-like substance responded to electric shock therapy.

4. A discussion of the contrasting physiological effects of the 2 products of the adrenal medulla was made, and the suggestion was offered that the manic-depressive and involutional psychoses represent in man the counterpart of Cannon's fight-flight reaction in cats.

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DISCUSSION

DR. GUSTAV ECKSTEIN (Cincinnati).—I must say at once that most of this is quite out of my water, but it interests me. At the Federation meeting recently there were several papers on epinephrine and nor-epinephrine, one especially relevant, on dogs. In them nor-epinephrine has repeatedly been shown the more active pressor agent; nevertheless in a series it turns out that the exceptions run to 25%, which probably means that there are epinephrine and nor-epinephrine dog populations, also. Dr. Funkenstein's work obviously has wide physiological significance.

Where I hesitate is on the classification under Cannon's fight-flight. Cannon's response, it has seemed to me, ought to fit on all sides. There ought to be the right emotions, right reflexes, right chemistry. I think, too, there ought to be definable biological purpose. My hesitation is, would these psychotics in this total sense remind one of Cannon's cats? And I state my hesitation because Cannon's conception has powerfully affected and powerfully affects physiological and psychological thinking, and perhaps ought not to be expanded in a way to change its sense somewhat.

Cannon himself was cautious. It will be remembered how roundabout was his observation of his animals—the total emotion, the total bodily change. He wanted a natural experimental stimulus—for the cat, the barking dog. He also plainly, I believe, regarded purpose as part of the reaction. He spoke of it as "quick service in the struggle for existence." At another point he summarized the total changes as "directly serviceable in making the organism more effective in the violent display of energy which fear or rage or pain may involve." In another he italicized the word *prompt*. "In order that these reactions may be useful they must be *prompt*." It is

because of this emphasis running through many articles, and through 2 books, that I ask: Do these psychotics actually show the patterns and the sequence of patterns, the quality, and a sufficient number of the chemical and reflex characteristics, to be thought of in the proposed way?

I am sure the authors have considered this because they bring in the punishing superego as the fright stimulus. That, I know, is easy for a psychiatrist to do—thus flexibly to substitute the superego for a threatening outside stimulus against which a combined physiological defense reaction is being triggered. For me it is more difficult.

The authors in support of their thesis refer to the early study of George W. Henry. There the manic-depressive lives in the trough of their depression showed profound gastrointestinal hypomotility and hypomotility. The majority of 96 cases retained barium and food residues for periods that ran sometimes beyond 2 weeks. Such guts to me seem functionally dead, and to me it does not alter the situation that they recover with the recovery from the depression. To relate them qualitatively, let alone on the basis of time, let alone on the basis of physiological meaning, to the intestines of cats in a fit of rage strikes me as wrong. The hypomotility may be the same, the adrenal secretion may be the same, though quantitatively I would doubt it; the innervation may be the same. Or, to say exactly what I think, I am not sure the innervation would prove the same if we had methods for knowing it fully. And I believe this simply because the life situations are so different. In cats this phase of the reflex is to shunt to the side what can for the time be shunted to the side, in order that all resources may be thrown to battle or retreat. However, I admit that this could conceivably only mean that my way of seeing has not prepared

me to find in depression the same dynamic shapes that Cannon has taught us to recognize in battle and retreat.

The autonomic nervous system has 2 divisions, we say. In the past the need sometimes to backtrack from classification of tone states, personalities, and the like, as being sympathetic or parasympathetic, arose, in my opinion, from attempting to squeeze many into 2. I think, of course, that today we are on firmer ground because our data are more measurable. Still I cannot escape seeing that in the work under discussion the "epinephrine-like" is admittedly something of an assumption; the making of the depressive states into defense reactions is considerably an assumption; and the use of the punishing superego as the fright stimulus is also something of an assumption. The total is ingenious. It is possible. The employment of plottings for the mecholyl reaction in the cases of the "epinephrine-like" and the "nor-epinephrine-like" must not, however, be regarded as bestowing mathematical precision upon the total hypothesis. I question the appropriateness of employing here Cannon's clear-cut physiological grouping. Cannon's success, I think, stemmed from the fact that he happened to be studying a large inclusive emotion, namely excitement, that had a large biological purpose, namely defense.

DR. DANIEL H. FUNKENSTEIN (Boston, Mass.).—We agree that the term "defense reaction" is used perhaps too often and too loosely by psychiatrists. A great deal of psychological and dynamic investigation, however, favors the depressive reaction as a defense against threats, mostly internalized. The similarity of the physiological changes of depressions and Cannon's animals suggests the hypothesis we raised. We can go no further at this time.

LIPOPROTEINS IN GENERAL AND CEREBRAL ARTERIOSCLEROSIS¹

PRELIMINARY REPORT

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With the increasing age level of the population, intense interest in the medical and psychological aspects of aging has developed, but no fundamental advances in the field of gerontology will be made until the biology of the aging process, the changes in body tissues, and the psychological adjustments and compensations made by the organism with advancing age are better understood. One of the most serious problems facing the mental hospitals is the increasing rate of admissions of patients in the aged group, particularly in the two diagnostic categories of psychosis with cerebral arteriosclerosis and senile psychosis. It has been estimated that approximately 38% of present admissions to mental hospitals are so diagnosed, and present trends indicate that this ratio will increase in the future(1).

It is extremely important to define what is meant by the term arteriosclerosis. Different lesions, such as hyperplastic arteriosclerosis, atherosclerosis, and Moenckeberg's sclerosis, are often used interchangeably. To differentiate these types is more than an academic question, as an accurate definition may help to clarify clinical problems, and in turn possibly lead to therapeutic and prophylactic measures in a field of increasing importance, especially in the area of chronic disease. There is a widespread misconception that atherosclerosis and arteriosclerosis are identical. Two large categories of manifestations of arteriosclerosis should be kept in mind: (1) atherosclerosis, which affects the larger arteries and which is characterized

primarily by focal intimal sclerosis associated with more or less lipid infiltration, and (2) arteriosclerosis, in which arterioles display concentric thickening of walls and hyaline changes. We are here concerned with the problem of atherosclerosis. It is not the purpose of this study to present data as to whether lipid infiltration or intimal hyperplasia is the primary lesion of atherosclerosis, but to present a preliminary study of a biochemical character of possible correlation between the level of certain large molecules of lipoprotein in the serum and the presence, clinically and pathologically, of atherosclerosis.

The physiology and pathology of cholesterol metabolism are still far from clear. For many years it has been suspected that the blood lipids, including cholesterol and its esters, phospholipids, and neutral fats, may be related to the pathogenesis of human atherosclerosis, but this has never been definitely established. It is well known, however, that the level of serum cholesterol is often elevated in diabetes mellitus, hypothyroidism, and nephrosis, and that these conditions predispose the individual to prematurely intense atherosclerosis. Although one may find serum cholesterol levels above 260 mg. percent in patients with definite clinical evidence of atherosclerosis, there are many more such individuals with blood cholesterol levels well within the normal range (125-260 mg. percent by the Schoenheimer-Sperry method). The observations that atherosclerosis develops in many persons with normal cholesterol levels, and that there is little relationship between the extent and intensity of atherosclerosis and the serum cholesterol level, have led many to doubt that cholesterol plays an important role in the pathogenesis of atherosclerosis.

None of the cholesterol in serum circulates as individual molecules of either free

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or esterified cholesterol, but rather as large molecules containing cholesterol and other lipids in association with protein. The usual clinical methods of cholesterol determination involve the destruction of most of these lipid-bearing giant molecules of serum, and following this the estimation of "free" and "esterified" fractions of cholesterol. In order to identify and quantify the individual lipid-bearing giant molecules in serum, Gofman and his co-workers (2-5) utilized the analytical ultracentrifuge to determine whether the level of certain of these giant molecules might be related to atherosclerosis in the human subject, even though the level of "free" and "esterified" fractions is not. By means of the analytical ultracentrifuge, the lipoproteins are segregated into a low density (less than 1.063) and a high density (more than 1.063) group. The blood serum is diluted with a concentrated sodium chloride solution and ultracentrifuged for 13 hours. The low density molecules collect at the top of the tube and are removed with a capillary pipette. This top fraction of low density lipoproteins is then centrifuged in the analytical ultracentrifuge at 52,640 RPM (forces approximately 200,000 to 250,000 times that of gravity). In this process, the lipoprotein molecules are identified by their flotation rates, by a specially designed optical system that registers the abrupt change in refractive index from the region of solution containing the macromolecules to the region from which these molecules have migrated. This is recorded as an inverted peak for the floating boundary, and the area over the peak provides a measure of concentration of these molecules (Figs. 1, 2a, 3). Flotation rates are given in S_f units (Svedberg units of flotation) under certain specified conditions.²

In human serum, Gofman *et al.* (2) have identified classes of lipoprotein molecules with flotation rates from $S_f 2$ to $S_f 40,000$, the $S_f 40,000$ group representing chylomicrons. In a study of the atherosclerosis developing in cholesterol-fed rabbits, it has been demonstrated that the rabbits who developed com-

ponents in the S_f 10-30 class were those who developed atherosclerosis, and the severity of the atherosclerosis was in direct proportion to the concentration of the lipoproteins in the S_f 10-30 group. In human subjects it has been shown that the level of molecules below $S_f 20$ is free from fluctuation and is unrelated to meals in contrast to the molecules greater than 20 S_f units. Since the S_f 10-30 class of lipoprotein molecules appears to be directly related to the development of atherosclerosis in rabbits, it appears quite probable that these are the molecules that in the process of blood transport supply the lipids for the atheroma formation. In the human subject the molecules of the S_f 10-20 category appear to subserve this same function.

In the so-called normal population, presumably without evidence of atherosclerosis, prepubertal children have the lowest levels of S_f 10-20 molecules; females in the 20-to-30 age group show consistently lower levels than males; and there is a progressive decrease in the difference in levels between the 2 sexes at least up to age 60, as the levels increase with increasing age. It is safe to assume that a group of patients with clinically proven myocardial infarctions, or even with angina pectoris, should have more coronary artery atherosclerosis than a group of normals of similar age and sex distribution, and this is established by this technique of cholesterol determination. Three times as many patients with proven myocardial infarctions show high levels as compared to normals. Cases of hypertension (with diastolic blood pressure over 100 mm Hg) who have had coronary infarctions, and/or coronary insufficiency, have high S_f 10-20 lipoprotein levels much more frequently than do uncomplicated hypertensives. This may explain why complications of coronary or cerebral infarction occur in only certain hypertensives, that is, those with high blood lipoprotein levels associated with atherosclerosis. Cases of diabetes mellitus manifesting hypertension, and/or coronary disease, when compared with uncomplicated cases of diabetes mellitus display similar differences.

It is important to emphasize that molecules of the S_f 10-20 class may be high, whether the usual blood cholesterol is high, low, or

² One S_f unit = flotation rate of 1×10^{-13} cm/sec/dyne/gm. The specified conditions for these studies refer to use of a sodium chloride solution of density 1.063 gms/cc at 26° C. Spinco Model L and Model E ultracentrifuges were used throughout.

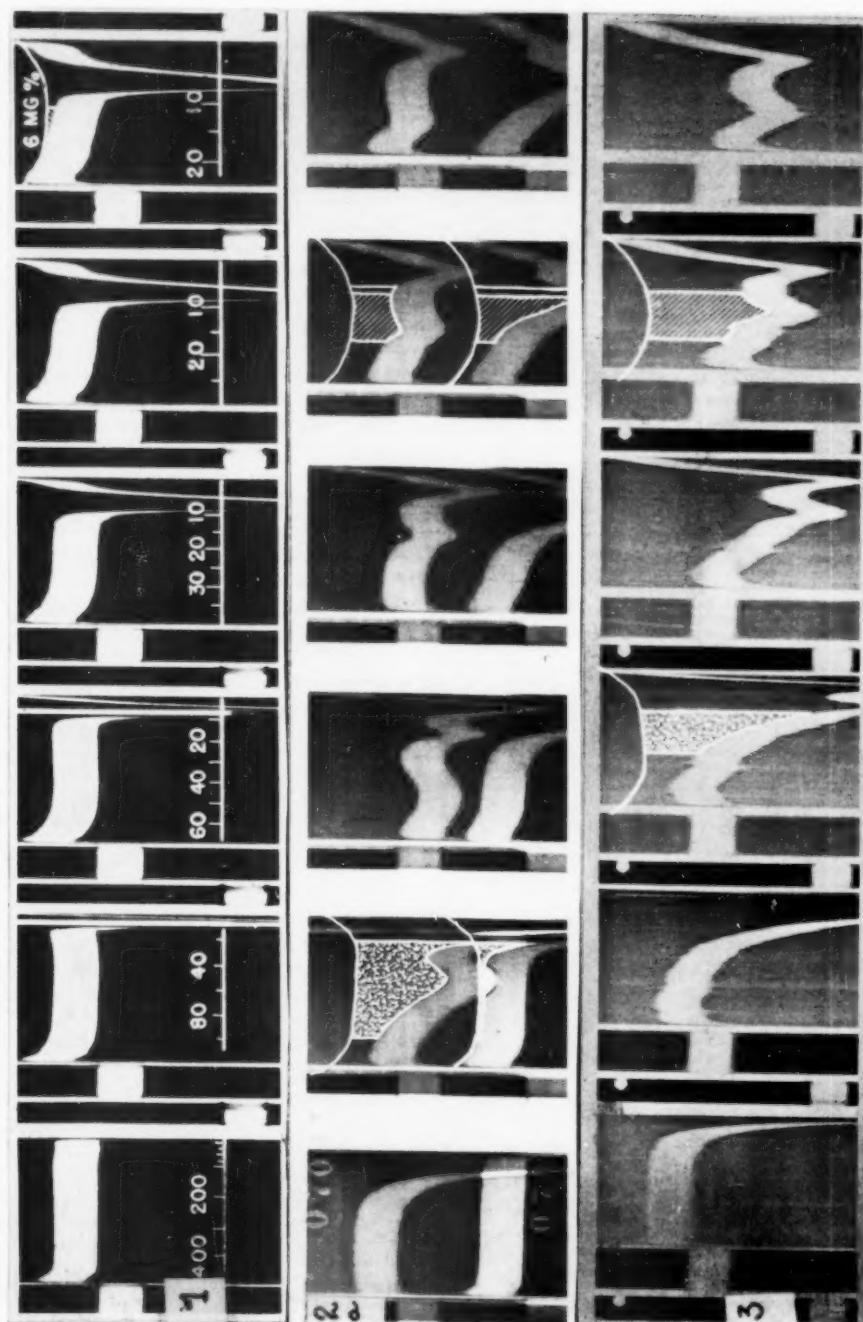


FIG. 1.—Flotation pattern of low-density lipoproteins from a normal 20-year-old male showing exceedingly low level of Sr 10-20 molecules. Each frame is rolled for calculation of the Sr rate of any peak appearing in that frame. In this figure, as well as in those below, successive frames are at 0, 6, 12, 22, 30, and 38 minutes after full rotor speed of 52,640 rpm has been reached. Hence, Sr rate markings may be used on corresponding frames in all patterns below. The Sr 10-20 value is 6 mg%.
 FIG. 2A.—(Upper pattern.) Flotation pattern of lipoproteins from a 64-year-old female following myocardial infarct, one year beyond the acute phase. The Sr 10-20 value is 167 mg%.
 FIG. 3.—Flotation pattern from a patient with xanthoma tuberosum, myocardial infarction and peripheral arteriosclerosis obliterans. The Sr 10-20 value is 208 mg%.



normal. The normal or low serum cholesterol level is no indication that molecules of the S_f 10-20 class are absent. If one accepts the thesis that this group of lipoproteins is the essential source of lipids in atheroma, then therapeutic and prophylactic efforts should be directed at reducing the levels of these substances. One may well ask, can the structural alterations be prevented, or once established can they be prevented from progressing, or once established can drug or dietary therapy influence the return to normal? It has been demonstrated that a diet containing 20 to 50 grams of total fat, and restricted to 200 mg. of cholesterol daily, and at the same time adequate in protein, causes an appreciable decrease in the level of S_f 10-20 molecules, and this decrease may or may not be accompanied by a decrease in total serum cholesterol. A restriction of both animal and vegetable fats is required, independent of cholesterol intake. No definite conclusions can as yet be made as to the therapeutic value of such dietary restriction, as studies must be made over a long period of time, but its possible prophylactic value should be kept in mind. Studies on the effect of various drugs on lipoprotein levels are continuing at this time.

Studies on Patients Diagnosed Psychosis with Cerebral Arteriosclerosis

A group of over 200 patients resident in a mental hospital and diagnosed as suffering from psychosis with cerebral arteriosclerosis were studied. All of these presented a history of progressive intellectual deterioration, viz., memory defects, confusion, and disorientation. The majority showed hypertension and all displayed sclerosis of peripheral vessels as palpated over radial and brachial arteries. In a few, there was evidence of retinal arteriosclerotic changes, but for the most part reports concerning retinal arteries were not noted in the hospital charts. Of the total group of patients from whom blood specimens were obtained, 146 were between 51 and 75 years of age, 86 male and 60 female. Of the 86 males, 19 were between 51 and 60; 52 were between 61 and 70; and 15 were between 71 and 75 years of age. Of the 60 females, 17 were between 51 and 60;

30 were between 61 and 70; and 13 were between 71 and 80 years of age. The duration of overt symptoms of a psychosis varied from 2 months to 12 years (average 4.0 years). The duration of hospitalization varied from one month to 12 years (average 3.2 years). Lipoprotein (S_f 10-20 class) levels of these 146 patients diagnosed as psychosis with cerebral arteriosclerosis were compared with the lipoprotein levels of 250 presumable "normals" between the ages of

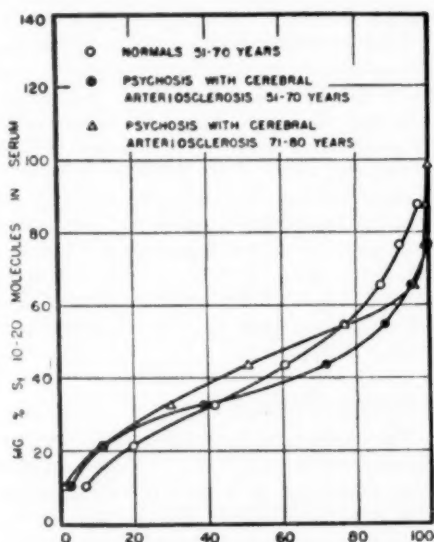


FIG. 4.—Percent of individuals with S_f 10-20 molecule concentration less than any chosen level.

51 and 70 with no evidence of clinically manifest disease and with negative findings on physical examination and history. Of the total number of patients on whom blood samples were taken, 24 came to autopsy. The pathological findings on these will be described below.

The data presented in Fig. 4 permit one to compare the S_f 10-20 molecule level of "normals" with that of cases of "cerebral arteriosclerosis." It is to be noted that there is little difference between the 2 groups. When males and females are compared and when comparisons are made at any age level between 51 and 80 no significant difference is noted among these various groups. If the hypothesis is accepted that the level

of lipoproteins of the S_r 10-20 class is a reflection of the activity of atheroma formation, then it must be concluded that those patients diagnosed clinically as psychosis with cerebral arteriosclerosis show no more atherosclerotic activity than presumably normal individuals in the same age group. It is, however, possible that patients with clinical evidence of cerebral atherosclerosis in the form of focal neurologic signs such as hemiplegia would show significantly higher S_r 10-20 lipoprotein levels than "normals," and such a study will be reported in the future.

That lipoprotein levels are not higher for this group of psychotic patients may be due to various factors: (a) those individuals who had high levels may have already died as a result of coronary or cerebral infarctions; (b) since those patients have been hospitalized for several years, the type of food intake may have tended to lower a level that might have been higher prior to hospitalization; and (c) many of these patients are more or less physically debilitated, and this may have been a factor in lowering a previously high level.

Pathologic Findings

The findings in the 24 cases who came to autopsy are listed in Table 1. Blood samples were taken one to 6 months before death. The majority of these patients were in the 70-to-80 age group, the average being 76. In 3 of the cases there was a history suggestive of cerebrovascular accident, but the outstanding clinical feature in the group was that of an insidiously progressive dementia that varied in duration from one to 13 years (average 4.8 years). Nevertheless, they were all diagnosed as psychosis with cerebral arteriosclerosis, presumably on the basis of peripheral arteriosclerosis and/or hypertension. The pathological findings confirmed in all cases the presence of atherosclerosis varying from moderate to severe degree, as estimated from examination of the aorta, coronary, and cerebral arteries. It is understood that the term atherosclerosis refers either to intimal fibrosis or to "lipoidosis" (lipid infiltration) or to both. The degree of atherosclerosis as indicated in the table is an estimate based on the more severe process, either sclerosis or "lipoidosis." However, of the 21 cases where the brain

was examined, only 5 showed changes that could be attributed to atherosclerosis, namely, gross cerebral infarcts. The remaining 16 cases, although showing equally severe or moderate atherosclerosis of the basal vessels, presented cerebral lesions of a different type. In 8 cases there were purely senile changes such as diffuse neuronal degeneration, senile plaques, and Alzheimer neurofibrillary alterations. The remaining 8 cases showed, in addition to the senile type, lesions related to arteriosclerosis, namely, microscopic foci of perivascular gliosis and cysts. Except in the few cases with infarcts, there was no consistent correlation between cerebral changes on the one hand and the degree of atherosclerosis, either cerebral or cardiovascular,

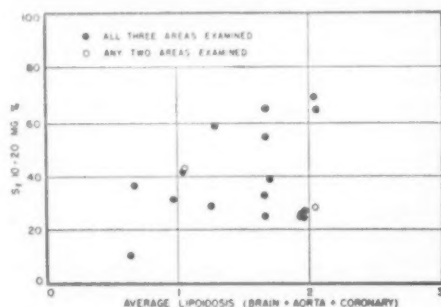


FIG. 5.

on the other hand. Such findings suggest that atherosclerosis plays a relatively minor role in the psychoses of old age; also, that such clinical signs as peripheral arteriosclerosis and hypertension are not valid criteria for establishing a diagnosis of psychosis with cerebral arteriosclerosis even in association with "organic dementia." There did not appear to be any definite correlation between the degree of concentration of S_r 10-20 molecules in the blood serum and the degree of either systemic or cerebral atherosclerosis as measured by the amount of intimal fibrosis. One would not have anticipated such a correlation since intimal fibrosis may reflect past rather than present atherosclerotic activity.

It appears that there is a trend to more "lipoidosis" with increasing levels of S_r 10-20 lipoproteins in the pre-death sample. However, the number of cases available to date preclude establishment of results of statistical significance (Fig. 5).

TABLE 1
AUTOPSIED CASES

Case	Age at death (yrs.)	B. P.	Duration of illness (yrs.)	Mg. % Sr. 10-20	Coronary atherosclerosis	Aortic atherosclerosis	Cerebral atherosclerosis	Cerebral tissue changes
1 (S. D.)	77	$\frac{180}{100}$	2.5	42	Severe	Unknown	Moderate	Senile
2 (E. B.)	76	$\frac{176}{107}$	6.5	26	Unknown	Unknown	Severe	Infarcts
3 (R. C.)	73	$\frac{160}{102}$	1	26	Severe	Unknown	Severe	Senile
4 (C. P.)	59	$\frac{178}{96}$	11	26	Severe	Moderate	Severe	Infarcts
5 (C. C.)	70	$\frac{208}{110}$	3	24	Severe	Severe	Severe	Infarcts
6 (M. B.)	84	$\frac{130}{80}$	2	23	Severe	Moderate	Severe	Senile
7 (R. W.)	80	$\frac{200}{98}$	4	59	Moderate	Moderate	Moderate	Senile
8 (S. N.)	77	$\frac{168}{98}$	1.5	30	Severe	Moderate	Moderate	Senile
9 (A. B.)	68	$\frac{130}{78}$	5	37	Moderate	Severe	Moderate	Senile arteriosclerotic
10 (F. S.)	89	$\frac{188}{90}$	2	24	Severe	Severe	Moderate	Senile arteriosclerotic
11 (V. H.)	75	$\frac{144}{100}$	4	32	Severe	Severe	Moderate	Senile
12 (C. S.)	81	$\frac{160}{110}$	1.5	8	Moderate	Moderate	Moderate	Senile arteriosclerotic
13 (L. D.)	80	$\frac{188}{112}$	13	69	Severe	Severe	Moderate	Senile arteriosclerotic
14 (M. B.)	77	$\frac{150}{84}$	4	41	Moderate	Moderate	Moderate	Senile arteriosclerotic
15 (M. R.)	79	$\frac{180}{92}$	8	39	Severe	Moderate	Moderate	Senile arteriosclerotic
16 (A. L.)	67	$\frac{210}{110}$	9	29	Unknown	Unknown	Severe	Infarcts
17 (E. T.)	80	$\frac{140}{90}$	9	24	Moderate	Moderate	Brain not examined	
18 (S. C.)	83	$\frac{145}{95}$	3.5	30	Moderate	Unknown	Brain not examined	
19 (M. F.)	67	$\frac{200}{90}$	2	24	Moderate	Unknown	Brain not examined	
20 (A. W.)	77	$\frac{192}{102}$	3	64	Severe	Moderate	Moderate	Senile
21 (J. F.)	74	$\frac{150}{80}$	3	56	Moderate	Moderate	Moderate	Senile
22 (P. H.)	82	$\frac{200}{74}$	2	24	Moderate	Moderate	Moderate	Senile arteriosclerotic
23 (G. W.)	67	$\frac{170}{90}$	5	27	Moderate	Moderate	Moderate	Infarcts
24 (E. J.)	77	$\frac{182}{100}$	8	64	Severe	Moderate	Moderate	Senile arteriosclerotic

SUMMARY

1. Lipoprotein levels (S_{τ} 10-20 class) of a group of patients diagnosed as psychosis with cerebral arteriosclerosis display little significant difference from a group of normals of similar age. If the level of lipoproteins (S_{τ} 10-20 class) is a reflection of the activity of atheroma formation, then these patients show no more atherosclerotic activity than presumably normal individuals of the same age.

2. The autopsy findings in 24 cases suggest that cerebral atherosclerosis plays an insignificant role in so-called psychosis with cerebral arteriosclerosis, the latter being due either to senile or arteriolosclerotic changes. There appears to be a trend to more "lipoidosis" as observed in the aorta, coronary, and cerebral vessels, with increasing levels of S_{τ} 10-20 lipoproteins in the blood serum.

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RECENT BIOCHEMOTHERAPEUTIC DEVELOPMENTS IN PSYCHIATRY¹

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Historically, the brilliant observations of such great clinicians as Kraepelin and Bleuler, Jellgersma and Freud, foreshadowed the advent of the psychiatric biochemotherapies—therapies employing agents of physiologic origin or character, such as thyroid and the sex steroids, insulin and histamine. Even now, the successes achieved with those procedures make mandatory their extensive application in the practice of clinical psychiatry. In addition, these procedures are of major importance in defining the metabolic alterations involved in the etiology and pathogenesis of mental disorders. This paper attempts to point both the practical importance and physiologic implications of these procedures.

THYROID

The earliest recorded physiologic psychiatric therapy was the use of thyroid in cretinism. At the turn of the century, Kraepelin wrote(1),

Cretinism is one of the few forms of insanity in which we can obtain at any rate an approximate idea of the connection between cause and effect . . . we have both in cretinism and myxædema,

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an example of the fact that the destruction of a small constituent portion of the body may bring about severe disturbances in its whole economy and more especially may be the cause of insanity. It makes no difference in what way the destruction of the gland is effected . . . quite dissimilar external causes may thus produce the same picture of disease by destroying the same link in the chain of the process of metabolism of the tissues, and thus giving rise to the same morbid changes in the physical and mental economy. Our knowledge of such connections is of very recent origin. It is, therefore, conceivable that similar relations may some day be discovered in other forms of insanity.

In the years that followed, many investigators studied the possible relationship between thyroid and schizophrenia; among them Cohen, Gjessing, Brody, Sargent, Fraser and Brazier, Danziger and Kindwall, and, more significantly, Roy G. Hoskins and Karl Bowman(2-8). Hoskins reported (1) an increased tolerance to thyroid in schizophrenics, (2) evidence of deficiency in 10% of those hospitalized, and (3) in the deficient patients, definitive improvement following thyroid therapy. In following up his many years of interest in thyroid function in schizophrenia, Bowman recently demonstrated with radioactive iodine an increased uptake by the thyroid in schizophrenics. We have found that when schizophrenics are placed on thyroid their high tolerance to histamine is markedly reduced.

SEX STEROID THERAPIES

In 1914, Freud wrote(9),

We must bear in mind that some day all our provisional formulations in psychology will have to be based on an organic foundation. It will then probably be seen that it is special chemical substances and processes which achieve the effects of sexuality and the perpetuation of individual life in the life of the species.

In 1927, when certain male hormone investigations were attracting considerable at-

tention, Freud reiterated his belief to one of the authors (van Ophuijsen), "Of course, you know I am firmly convinced that one day all the disturbances we are trying to understand will be treated by means of hormones or similar substances." It was about this time (1926) when Kandors (10) claimed improvements in dementia praecox with testicular and ovarian extracts. Beginning in the thirties, the utilization of sex steroids of significant potency led to reports (11-22) of beneficial results by Bowman and Bender, Werner, Ault and Hootor, Kluber, Suckle, Jones, and others using theelin, estradiol, and stilbesterol. Then, in the 1940's, favorable effects were recorded by Guirdham, Zeifert, Danziger and Blank, Rosenzweig and Freeman, and Altschule and Tillotson (23-27) following the administration of testosterone preparations in psychoses. These papers have not gone uncontroverted (28-32).

Recently, we reported on the effects of combined sex steroid therapy in massive dosages in several psychoses (33). In a group of 40 patients, mainly schizophrenic, manic-depressive, and involuntal psychotics, convalescent status or + + + + improvement^a was achieved in 86% of younger patients, in 53% of psychotics with 6 months' hospitalization or less and in 30% of the over-all uncategorized series.

Three of our physiologic observations in sex steroid therapy are pertinent to this report: (1) Reduction in tolerance to histamine is often noted following sex steroid therapy as it is with thyroid. (2) The frequent development of marked eosinophilia and lymphocytosis (34) during sex steroid therapy (see Fig. 1) is interestingly related to similar though less marked hematologic changes during insulin coma therapy (35-37) and electroconvulsive therapy (38). (3) Still more striking is our finding of an

^a + + + + improvement (convalescent status) or its equivalent (some patients could not be permitted to go home for other than psychiatric reasons). Attainment of + + + + improvement required the maintenance of improvement in all areas. The patients in this group are not considered "cured" but the disease process was considered as reversed sufficiently to eliminate the need for hospitalization and meet the hospital's requirement for convalescent status.

association between clinical status and (a) the degree of eosinophilia attained (see Fig. 2 and Table 1) and (b) the percentage increase in the lymphocyte/neutrophile (L/N) ratio.

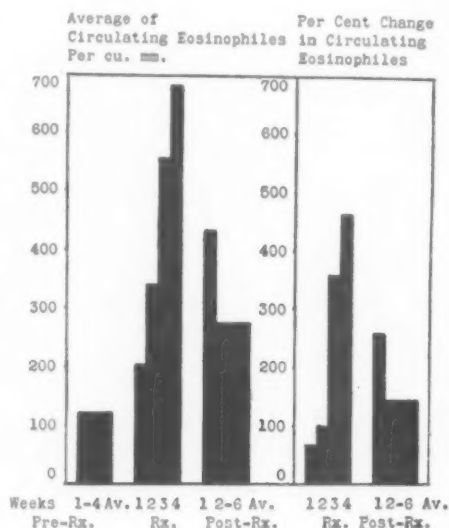


FIG. 1.—Eosinophile levels before, during, and after testosterone-estrogen therapy. (After Sackler *et al.* (34).)

INSULIN

Though Cowie, Parsons, and Raphael (39) in 1923 noted that depressed states in diabetics cleared with insulin treatment and though symptomatic improvement following insulin was reported by Targowla (40) in 1926, Appel, Farr, and Marshall (41) in 1929, and Kupperts and Srehl (42) in 1933, the insulin coma therapy currently in use is properly attributable to work of Manfred Sakel (43). The subsequent history of this biochemotherapy has been frequently reviewed. Subcoma insulin biochemotherapy dates to the 1940 reports of Polatin *et al.* and Bennet and Miller (44). The techniques and findings are the subject of papers by Polatin, Spotnitz and Wiesel, Sargent, Draske, Rennie, Tomlinson, Sullivan, and others (45-56).

In 1944, Billig and Hesser (57) reported that the depth of coma in insulin therapy was more closely related to the blood histamine

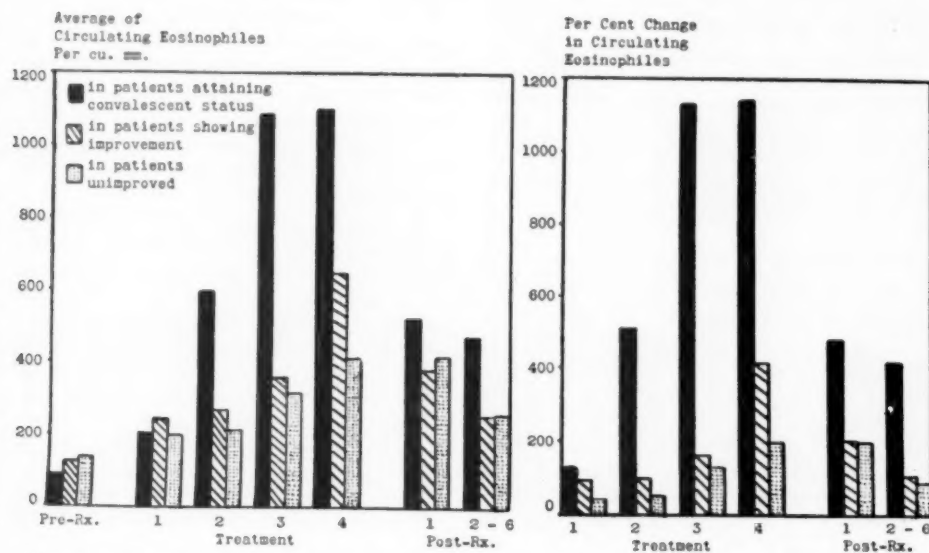


FIG. 2.—Association between clinical improvement and change in circulating eosinophile levels. (After Sackler *et al.* (34).)

TABLE 1
CORRELATION OF IMPROVEMENT WITH DEC "PROGNOSTIC" INDEX

Patient			Diagnosis	Total dosage T/E in mg.	Results T/E Therapy	DEC Index
No.	Sex	Age				
130	F	20	S.-c.	1300/43.3	++++	36.7
126	F	30	S.	1100/36.6	++++	25.0
133	F	23	S.-s.	800/26.6	++	14.4
216	M	53	M.D.-d.	1450/76.6	++	13.6
128	F	56	M.D.-d.	800/26.6	++++	11.0
218	M	34	S.-p.	1250/41.8	++++	10.2
113	F	51	M.D.-d. Inv.	487/31.6	++++	7.1
131	F	29	S.-p.P.P.	1100/36.6	0	5.9
211	M	46	S.-p.	1250/41.7	0	5.2
212	M	62	M.D.-m.	1300/43.3	0	5.1
127	F	17	S.-p.	750/33.2	(++++)*	3.1
125	F	30	S.-c.	1125/33.2	+	3.1
213	M	56	M.D.-m.	1200/36.6	(++)*	2.9
129	F	34	S.	900/31.6	+	2.7
214	M	53	I.M.-p.	1150/36.3	0	1.7
134	F	53	I.M.-p.	750/38.3	0	1.4
135	F	47	I.M.	1050/61.6	0	0.92

S. — Schizophrenia.
 S.-s. — Schizophrenia, simple type.
 S.-c. — Schizophrenia, catatonic type.
 S.-p. — Schizophrenia, paranoid type.
 (*) — Transient.
 DEC — Ratio of peak resting level during or after course of treatment to average of resting levels before treatment.

M.D.-d. — Manic-depressive, depressed.
 M.D.-m. — Manic-depressive, manic.
 M.D.-d. Inv. — Manic-depressive, involution.
 I.M. — Involutional melancholia.
 I.M.-p. — Involutional melancholia, paranoid.
 P.P. — Postpartum.

After Sackler *et al.* (33, 34).

level than to the hypoglycemia. The eosinophilia and lymphocytosis reported in both insulin coma and sex steroid therapy, the reduction in histamine tolerance following sex steroid and thyroid therapies, and the increase in blood histamine titres in insulin coma further the impression that common physiologic denominators are operative in the diverse biochemotherapies.

HISTAMINE

The first attempt to utilize histamine therapeutically in psychiatry was recorded in the negative report of 3 catatonics by Gildea, Hubbard, Himwich, and Fazekas (58) published in 1935. Since then more than 500 patients (59, 60) have received histamine biochemotherapy in different regimens with "improvement" variously reported as from 24% to over 50% in schizophrenic, manic-depressive, and involutional psychoses of varying degrees of severity and duration. In fact, all subsequent reports (61-71) have been favorable, with the exception of Taylor (72), who attempted histamine biochemotherapy of arteriosclerotic psychotics. Rorschach (66, 73-75) and other psychological tests have corroborated the clinical observations that beneficial changes in certain psychiatric disorders may be initiated with histamine.

The observation that both thyroid and the sex steroids reduce the ability of psychotics to tolerate histamine can now be projected against a number of significant findings in our histamine biochemotherapy studies; namely:

1. Schizophrenics, as a group, can tolerate large amounts of histamine.
2. Hospitalized schizophrenics are capable of tolerating larger doses of histamine than nonhospitalized schizophrenics, indicating an association between severity of illness and the ability to tolerate histamine.
3. Ability to tolerate histamine seems to be increased in the presence of agitation, depression, and anxiety and appears to decrease with clinical improvement.

The production of eosinophilia in successful sex steroid and insulin biochemotherapies gives added significance to the observations that:

4. An abnormal eosinophile response of a psychotic to the oral administration of glu-

cose (*i.e.*, either little or no eosinopenia or even an eosinophilia) generally changes to a normal response during or after a course of histamine biochemotherapy (*i.e.*, the eosinophile curve becomes the mirror image of the blood sugar curve).

5. A slight increase in resting eosinophile level may occur during and after a course of histamine.

In relation to carbohydrate metabolism, particularly with regard to possible insulin-adrenal cortical relationships, it is interesting to note that:

6. Patients with diabetic-type pretreatment glucose tolerance curves (Exton-Rose and also standard 5-specimen procedures) revealed more normal curves following histamine biochemotherapy.

PHYSIOLOGIC INTEGRATION

The implications of the findings relating to any one of the biochemotherapies grow as it is related to one of the others and, when all 4 are integrated, a new level of perspective is gained that unifies data previously seemingly unrelated, confusing, and even disturbing.

When a number of physiologic agents produce similar, clearly defined clinical benefits, they present a challenge to integrative investigation. To regard them categorically as "unlikely" or to explain away as "non-specific" purely on the grounds that they were produced by diverse means is to disregard the fundamental biologic fact that certain, specific, identical physiologic effects can be brought about by a number of different agencies. A case in point is provided by the changes in eosinophile levels during or following biochemotherapy with insulin, sex steroids, and histamine.

Within the limitations of this paper, we can now reexamine a few of the data presented in the light of the integrative approach that led us to emphasize fundamental physiodynamics and to postulate the existence of certain biochemical factors in the etiology and pathogenesis of the functional psychoses, so-called (76, 77).

The ability of schizophrenics to tolerate large amounts of histamine and the apparent quantitative correlation between severity and tolerance suggest the presence of unusual operative quantities of a physiologic

histamine antagonist or antidyne—possibly an adrenal substance. The alterations in eosinophile levels effected by certain successful biochemotherapies or occurring in conjunction with spontaneous improvement strengthened the belief that this antidyne could be adrenocortical. The increase in the L/N ratio affords some biochemical corroboration even as our survey and the findings by others of a low incidence of allergy and peptic ulcer in psychotics (35, 78-86) offer further inferential clinical support.

The physiologic findings that thyroid and the sex steroids reduce the ability of the psychotics to tolerate histamine, that sex steroid, histamine, insulin, and ECT cause an upward shift in the resting eosinophile and/or lymphocyte levels, and that all these substances have, in the hands of different investigators, proved to some extent therapeutically successful in different groups of schizophrenics, seem to suggest that they may have at least one common physiologic denominator—perhaps a type of anti-adrenocortical effect. Thus, in brief, we were led to formulations that envisaged a disruption in the physiologic equilibria between the adrenocortical hormone and its antidyne—the gonadal hormones, thyroid, histamine, insulin, and possibly other hormones, as a possible fundamental biochemical factor in the etiology and pathogenesis of certain of the psychoses. It was proposed that the protein catabolic effect of the adrenal cortical hormones could manifest itself in damage to neuronal nucleoprotein and it was predicted, on purely inferential grounds, that adrenocorticotrophic hormone (ACTH), adrenocortical hormone (ACH), and ACH-like substance given in large enough quantities for a long enough period of time will produce or activate psychotic-like, or schizophrenic-like, disorder in a significant number of individuals. Recent findings are of interest in this connection (87-90).

It is with admiration for his prescience that we now again quote Kraepelin, this time with particular reference to *dementia præcox*:

We only know that the years of physical development form a favorable soil in which the disease may break out . . . Moreover, the work of repro-

duction in women, and lastly deprivation of liberty, seem also to favor its appearance. The absence of external causes in this disease, and its relation to special radical changes in the physical economy, might perhaps suggest that here, too, we have an illness of which the final cause must be sought in disturbances in the metabolism of the tissues.

THE INTEGRATIVE APPROACH TO A NUMBER OF CLINICAL PSYCHIATRIC STATES

It would be of interest to view a few specific clinical entities and some of our data from the perspective gained in our integrative interpretation.

Adolescent schizophrenia or schizophrenia with its apparent onset in the second decade is the subject of some of our current sex steroid and histamine studies. In a small series of 10 hospitalized patients between the ages of 16 and 20 (with hospitalizations of less than 6 months' duration), 7 out of 10 (70%) of the patients improved so dramatically, either during 4 weeks of high sex steroid therapy or within one week thereafter, that hospitalization could be terminated. In what way does the schizophrenia occurring at or about puberty relate to the hypothesis that a possible gonadal deficiency exists in relation to adrenal cortical output? Puberty, *per se*, does not assure adequacy of gonadal output. The increase in gonadotropic and adrenocorticotrophic output may, under circumstances dictated by the relative differences in the responsivity of the end-organs, lead to an imbalance resulting in an operative excess of ACH (adrenocortical hormones). In these patients, clinical response is thus truly an expression of substitution therapy.

On the other hand, in a series of 17 non-hospitalized adolescent schizophrenics equally significant though not necessarily comparable improvements were attained with histamine biochemotherapy. These findings suggest that the schizophrenia in those patients improving is not necessarily the expression of a gonadal deficiency exclusively but may reflect in part or in whole dysequilibria between gonadal hormones and some antidyne—ACH, in our thesis.

Schizophrenia in adults, physiologically studied with histamine, high sex steroids, insulin, and thyroid biochemotherapies, provided evidence that was applied to our

theories above. Also strengthened were the concepts maintaining the existence of certain fundamental organic factors in schizophrenia. Significant in this respect are the progressively greater irreversibility or lower improvement rate in patients hospitalized for 6 months or more and the residua of scarring in patients with prolonged or frequent episodes.

Psychoses occurring postpartum in a series of 12 patients were also studied and, though the data as yet do not permit of definitive evaluation, nonetheless a chronologic if not a causal relationship was observed between resumption of menses and clinical progress in those patients improving.

Involucional psychoses treated with high sex steroid therapy or with histamine biochemotherapy did not, in the small and mixed (hospitalized and nonhospitalized) series under study, respond to the sex steroids as strikingly as the adolescent schizophrenics. Though histamine favorably influenced depressive and agitated episodes and relieved anxiety, there too the changes were considerably less impressive than those achieved in schizophrenics prior to involucional.

SUMMARY

The therapeutic as well as the physiologic implications of the biochemotherapies have been stressed; the development of 4 of them, thyroid and sex steroids, insulin and histamine, has been sketched; some of our physiologic and clinical data and observations have been integrated into a brief review of a formulation linking fundamental biochemical processes to the etiology and pathogenesis of certain psychiatric disorders. This concept has been presented as historically consistent with the deductions of Kraepelin, Freud, Bleuler, and Jellgersma as to the participation of endogenous biochemical factors in schizophrenic causation.

In conclusion, it is submitted that some of the most severe of the psychiatric disorders are no more a primary disease of the brain by itself than the exophthalmous of hyperthyroidism is a primary ocular disease or that diabetes is a primary disease of the blood or kidneys. It is proposed that the outlook even in the most malignant psychi-

atric processes is being dramatically improved by the early administration of such relatively simple and effective therapeutic agents as histamine and the sex steroids. The ultimate definition of the biochemical processes associated with mental disease must lead to an advanced science of psychiatry in which preventive therapy—biochemical as well as psychologic—will come into its own.

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THE FIRST TRAVELING PSYCHIATRIC CLINIC IN QUEBEC

A REPORT OF EXPERIENCES WITH ONE YEAR'S OPERATION

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New methods of diagnosis and treatment together with the increasing public interest in psychiatry have created an opportunity, and at times a demand, for the extension of psychiatric services to include more than the larger urban centres. This paper reports on such a project because of the unique features in the clinic's organization and practice.

Community and mobile rural mental health clinics are not new. During the past 30 years it has been found that a psychiatrist with one psychologist and one or more social service workers form a practical working team. These clinics have usually concentrated their efforts on children referred from various sources including the courts, welfare organizations, and schools. Because of the nature of these referrals most of the work consisted in establishing a diagnosis and recommending on disposal of problems. Public education was a function of these clinics, but in this as well as the clinical activities the value of the work done was difficult to assess except when actual therapy was carried out. Because of these facts, recent trends are to form an outpatient type of stationary clinic in smaller communities.

This report concerns a traveling mental health clinic established as part of the treatment services of the Verdun Protestant Hospital. This institution, with a bed capacity of 1,600, functions as an isolated nonprofit state hospital although privately endowed and administered with teaching affiliations for all clinical personnel. The traveling clinic was proposed to provide a screening of cases prior to admission and a follow-up of those discharged. It was hoped that a treatment and consulting service along with a program of public education would find acceptance in smaller communities. The project was financed through the Dominion Provincial

Health Grants(1) and began operations in October, 1949. The clinic was composed of a psychiatrist, assisted by a psychologist and a social service worker, as well as volunteers in various categories.

Sherbrooke, a city of 50,000 population (103 miles from Montreal) was selected as the first centre to visit for the following reasons. The physicians in the area had expressed an interest in a psychiatric service through the department of psychiatry, McGill University. The city is a clinical and commercial centre for a considerable number of smaller communities within a 30-mile radius. The essential office, nursing, and hospital facilities for the clinic were available.

The first problem was to have the clinic accepted by the community and it was decided to seek the advice of the local physicians. Consequently a preliminary conference was held with the doctors of the area and the goals of the clinic outlined. It became evident in the discussion that a psychiatric service for adults and children would be welcome. Some doubt existed about the possibility of persuading patients to see a psychiatrist. One of the physicians³ undertook to act as our local representative with the full approval of his confreres, to arrange consultations and public meetings, and in lieu of our forming a local committee. The Family Welfare Association and the Sherbrooke General Hospital provided office and treatment facilities gratis. These arrangements have proved simple, efficient, and a real community contribution to the project.

Thus the clinic began and continues to function in liaison with the practising physicians of the district. Only physicians can refer patients to the clinic and our confidential reports go directly to the referring physician. Naturally this led to a closer association with the general hospital, which proved an important feature, where the pos-

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sibilities of actual treatment became evident. It also resulted in the student nurses receiving lectures and the internes attending clinics and assisting in the treatment of inpatient psychosomatic complaints.

Once the clinic had begun it was found that the examination of psychotic types was a minor need compared to the number of children and adults referred for therapy but not hospitalization. The *treatment activities* of the clinic deserve emphasis since many would question, and indeed we did, the value

the potentialities of unadorned psychotherapy. Most will accept a statement that their nervous system requires treatment. Where some would find it hard to come 10 miles for an "interview" others would gladly come 40 miles for a "treatment." The advantage of the nitrous oxide technique in all cases is the rapid development of rapport and the quick physiological recovery without post-treatment sedation.

In cases of mental deficiency and epilepsy simple instructions to the family and regula-

TABLE 1
CLASSIFICATION OF CASES, WITH RESULTS OF TREATMENT

Psychiatric diagnosis	Patients	Visits	N ₂ O Treatments	Recovered	Improved	Unimproved
Manic-depressive	3	14	9	..	2	1
Schizophrenia	8	13	5	..	6	2
Involuntional melancholia.....	1	1	..	..	..	1*
Senile psychosis.....	2	2	..	..	..	2
Toxic psychosis.....	1	1	..	1	..	..
Total psychoses.....	15	31	14	1	8	6
Neurasthenia	3	20	17	1	1	1
Anxiety hysteria.....	9	30	10	1	6	2
Conversion hysteria.....	13	55	27	..	7	6
Simple adult maladjustment.....	7	31	11	..	6	1
Reactive depression.....	4	12	5	1	3	..
Mixed neurosis.....	3	7	..	1	2	..
Total psychoneurosis.....	39	155	70	4	25	10
Mental deficiency.....	13	14	..	..	12	1
Epilepsy	3	9	..	..	2	1
Behaviour problems in children..	6	23	..	1	3	2
Grand total.....	76	232	84	6	50	20

* Recovered in hospital.

of psychotherapy with patients seen only once every 2 weeks. Here we relied heavily upon the nitrous oxide technique that is particularly useful where ambulatory treatment is necessary. In addition to the technical advantages of this method, so well described by Lehmann and Bos(2, 3), we found it had special advantages that we might have predicted. The relief of tension was almost specific and useful in the symptomatic treatment and investigation of anxiety states and anxiety hysteria. The facilitation of abreaction and the incidental value because of the dramatic nature of the treatment was useful in conversion hysteria. To country folks the technique was found to be a sure means of selling the idea of psychotherapy quickly. They, like many patients, are not aware of

tion of medication was found to be well worth the consultation.

Supportive and energizing medications, for some depressive or apathetic states, and sedation in the initial phases of psychotherapy for the more severe anxiety cases were used.

Psychoses did not present any serious problem. Only one depression of 6 months' duration was hospitalized for electroconvulsive treatment with prompt recovery.

Table 1 indicates the classification and number of cases seen, the number of visits for treatment, and a conservative estimate of the results obtained.

Psychological testing was utilized in almost every case to save time and high-light special features in the psychopathology of

adults. Here the Rorschach and Thematic Apperception methods were useful. In children play techniques were of assistance in diagnosis and treatment supplementing the usual intelligence tests.

Social service histories were time saving and informative both at the first visit and in follow-up inquiries. With a full-time clinic the social service would be even more effective with visits to the community some time before each clinic period.

The *family physician* referring the patient frequently helped us by supplementing the case history. All medications were prescribed through the family physician, and he was immediately consulted or reported to by telephone in cases needing attention before our full report could reach him. The confidential reports to him were summarized and free of psychiatric technicalities.

The *public education program* was popular from the beginning, which is the usual experience. Part of this consisted of *addresses* to luncheon and dinner meetings to groups such as service clubs. More frequent, and with more specific focus on preventive psychiatry, were those *discussion groups* that centered about psychiatric films that were very well received (4). One or more of these discussion periods were held with the Home and School Associations, Women's Institutes, college undergraduates, and Nurses Associations in 9 different communities. The average attendance at these 15 meetings was over 100. The discussion was lively, interesting, and to the point, which indicates a distinctly favorable change in the public's thinking within the last decade.

Discussion of the first year of operation of a small isolated mobile mental health clinic should arrive at some conclusion as to the cost of the project and the possible or apparent value as a public health endeavour. The clinic operated for 2 full days every 2 weeks 100 miles from its base. Road conditions were difficult during the winter and spring. Under these conditions and lacking previous experience it should be looked upon as a pilot plant. It is obvious that most of the cases seen were rather advanced and some chronic yet the cost per patient visit was approximately \$10.00. Although this may seem expensive it can be pointed out

that 2 men, an accountant and an alcoholic electrician who had not worked for 2 years, were returned to and have continued work. These cases alone would discount much of the expense. The clinic team worked long hours and traveled by car when trains would have been safer. As one visitor with the clinic remarked, "This traveling health unit is healthy for everyone except the clinic members."

Granted that it is difficult to measure the value of a public education program, it nevertheless appears that we have seen good results in this part of the work. People and prospective patients tend to be afraid of psychiatry or consider it has nothing to do with themselves. As one doctor pointed out, before the clinic's work, patients considered it a disgrace and outrage if a psychiatric consultation was suggested. The changed attitude is illustrated by the case of one of our patients who, rather than trying to hide the fact that he was coming to the psychiatric clinic, said to another worker at the plant, "I understand your wife is attending the psychiatric clinic. I am myself and could give her a lift." It is true, and evident in the discussion meetings, that many people are more informed and certainly interested in psychiatry as applied to the emotional problems of living. However, much of their knowledge has come from radio and moving picture programs with the result that they are confused or lacking in even a healthy perspective to the subject. It is our opinion that the discussion group meetings accomplished a good deal toward correcting this situation.

Although professional education was not considered a function of the clinic, this became a by-product worth noting. Resident and visiting postgraduate students, medical and nursing, visited the clinic. Our nursing instructress and supervisors and social service workers attended as well as medical, nursing, and theological groups from the community. Among other things this has proved a stimulus to further extramural activities of the hospital staff within our own area.

Electroconvulsive and insulin therapy were not used in the clinic. Although seldom necessary in the cases seen one would expect to apply these methods occasionally once

a psychiatric ward became available and clinic visits more frequent.

ice because of the efficient therapeutic aids now available.

Conclusions:

The first year of operation of a traveling mental health clinic functioning as part of a mental hospital service, with emphasis on treatment and preventive psychiatry, is described. Close liaison with the local medical profession and new techniques of therapy are referred to and recommended. The results of this pilot project, attempting to serve a large area at a considerable distance from the clinic headquarters, auger well for its successful operation in smaller communities nearby. The clinic appears to be a useful and fitting extension of a mental hospital serv-

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SOCIOLOGICAL MOTIVATIONS OF DELINQUENCY¹

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It is no easy task to delineate the sociologist's orientation to delinquency, for there is much disagreement among the sociologists themselves in their approach to and interpretation of the problem. Moreover, with the increasing volume of psychological, social psychological, and other research in the field, it becomes more and more difficult to draw meaningful lines between the views and the findings of the several associated disciplines. As we shall note below, however, this integration of approaches may be considered one of the healthiest of the contemporary trends in criminological research. Risking the attribution to the sociologist of ideas that many would disavow, we shall attempt here to focus upon a few of the sociologists' views that appear to be of special significance rather than any comprehensive treatment of their research observations on social factors in delinquency.

More than in other fields, perhaps, it is intrinsic to the nature of the "scientific sociologist" that his appraisals should be qualified by skepticism and tentativeness. In recent years particularly he has required that careful empirical observation and impartial interpretation should precede conclusions, that in dealing with social behavior one must guard against dogmatism or *a priori* assumptions that reflect his biases. In studying deviations in social behavior, therefore, the sociologist is led to inquire: What is the particular nature of the conduct involved? What is meant by the "causation" of such behavior? What evidence is there upon which reasonably sound inferences may be drawn as to the relation of specific influences and the conduct in question? He is beset by the painful awareness that what he sees may reflect excessively his specialized training and experience or a too narrow theoretical orientation. For these reasons and because of the complexity of the delinquency prob-

lem the sociologist must approach this subject agnostically with many questions and can conclude with only very tentative hypotheses concerning causation. Thus far he finds little more than a mass of rather unsatisfactory descriptive data about selected groups of delinquents, much of it contradictory, little of it refined or conceptually integrated.

THE PROBLEM OF DEFINITION

An initial problem must be faced that is much more than academic; it is basic to the entire issue of etiology. Yet, unfortunately, it is one that remains quite unresolved in the field today: What is this phenomenon, juvenile delinquency? To the writer it has seemed that tremendous confusion has come from loose terminological usages in which delinquency is commonly employed as a vague category lacking any very specific meaning. True, it is possible to select particular cases of maladapted behavior about which no one would question the delinquent description. But there is a large periphery between delinquency and other types of disordered behavior. The distinctions are important for several reasons.

One great difficulty associated with the definitional problem relates to sociological research methodology. It is customary to study samples of cases to discover significant correlations that may point toward causation. To produce meaningful results such samples must be representative of the population under study. Thus, if the group investigated either excludes some types of delinquents or includes conduct deviates who are not delinquent, or even if the sample is distorted by a disproportionate number of offenders as to type or degree of seriousness, the researcher's conclusions can have little meaning. However well they may reflect the group he has studied, they do not depict the average delinquent. Commonly the research has been based upon samples of the more dangerous and repetitive offenders, mainly drawn from the courts and training schools. Other studies have included, along with law

¹ Read at the 107th annual meeting of The American Psychiatric Association, Cincinnati, Ohio, May 7-11, 1951.

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violators, individuals displaying assorted pathologies of personality or social situation but no real delinquency. Selection of a truly representative sample of delinquents is difficult if not impossible, as the recent study by Sheldon and Eleanor Glueck with its fastidious choice of both the offender and the control group so well reveals. The result of employing widely assorted delinquent groups is reflected in the discrepancies in research findings and in our persisting uncertainty about the causation of delinquency.

The matter of definition is as important to the individual case study method as it is to the statistical analysis of groups. To understand the specific patterns of motivation out of which delinquency develops, it is necessary to study that problem itself rather than child adjustment and deviation broadly. If in a clinic one observes only the more serious delinquents or psychopathological offenders—or any other special category of child behavior or disorder—his interpretations can apply only to that group. Obviously, the effect of interpretation based upon only a few or upon nonrepresentative cases can be quite misleading.

It may not be inappropriate to note in passing that there may be highly significant practical consequences to the child arising from failure to define delinquency with any nicety. Frequently as a result of the blurring between delinquency that endangers the community and other sorts of personal maladjustment, youngsters are exposed today to the authority and restraint, the inappropriate and injurious manipulations, of our juvenile courts, who should be handled instead by other social agencies and clinics. The increasingly prevalent conception of the court as a general agency of child welfare, together with the avoidance of the problem of delinquency definition, is leading toward an unspecialized and often chaotic treatment of child adjustment problems through children's courts.

This trend toward very imprecise description and classification is further encouraged by the inclination among some workers to equate delinquency and emotional disturbance. Too commonly, assorted varieties of unadjusted children are described as predelinquent, thereby establishing the implicit

presumption that the symptoms displayed lead normally to delinquency. Such prognostication on the basis of so-called "danger signals," though it has become increasingly popular in recent years—especially among social workers—seems to the sociologist to be for the most part quite unwarranted. It is true that from serious childhood personality and conduct disturbances future unadjustments of some sort may sometimes be predicted, but it is quite clear that we cannot foretell the future occurrence of delinquency itself in any significant proportion of cases. The attempt to do so may be seriously damaging to the child where it involves ascribing names to him and unnecessarily applying formal authority.

The study of the etiology of delinquency is limited for the most part to *ex post facto* methods of tracing back in the history of individuals already delinquent to what may appear to have been significant behavior sequences. A limitation of such methods is, of course, that the investigator may be led to inferences and generalizations that cannot be applied accurately to other, nondelinquent youngsters. It appears that most children who read comics, who come from broken homes, who live in slums, who lack effective religious training, who display neurotic symptoms, or who feel insecure or rejected, do not become delinquent. The trend noted above to expose so-called predelinquents to the unofficial treatment of courts, police bureaus, and other authoritarian and nonspecialized agencies is a dangerous consequence of loose definitions and of indiscriminate prophecy from inadequate data. It is elementary to note that delinquency may be induced in part through the definitions applied by the seers in our police departments, juvenile courts, and even in our child guidance clinics. To put the matter simply: prophylactic aids to badly adjusted children who are nondelinquent should be applied by *nonauthoritarian* and specialized agencies, avoiding the ascription of epithets or predictions in the children's court that must too often be inaccurate and not infrequently damaging.

Along with the trend toward treating widely assorted child welfare problems under the aegis of delinquency has developed in some quarters the inclination to describe all

delinquents as "disturbed" children or to equate that status with psychic illness of some sort. There is perhaps a natural inclination to do so among those clinicians whose cases represent the more emotionally distressed among young offenders, the more so in that these youngsters have ordinarily gone through recent harrassing experiences prior to their clinic referrals. The sociologist believes, however, that a large proportion of delinquents are psychically very well adjusted to their antisocial conduct and environment. Associated from their earliest years with other children whose values and habits are hostile to authority, the child may develop delinquent patterns without severe guilt feelings, insecurity, or other emotional disturbance. The late Professor Sutherland directed attention to the process of "differential association" through which the offender had come to introject the attitudes and norms of his fellows, violating the law as a part of the normal, expected behavior in his group. Clifford Shaw has further clarified the process through his analysis of the interrelated community influences out of which delinquency sometimes is bred. This is the group to which, I take it, Dr. Franz Alexander and other psychiatrists have applied the term, "the normal criminal."

It is by no means apparent to the sociologist that delinquents are significantly more neurotic, disturbed, or maladjusted in a psychological sense than the nondelinquents who live in similar areas of the city. Indeed, the recent Glueck research indicates that they are less neurotic and less often disturbed about economic status, school failure, moral scruples, and so on. There is serious error, in the writer's opinion, in the prevalent notion that delinquents and criminals are "sick people." This idea suggests a spurious uniformity rooted in some degree of psychopathology and an equally illusory myth that we need simply provide the magic nostrum of "psychotherapy" to resolve the problem of delinquency.

SOCIOLOGICAL ORIENTATION TO DELINQUENCY CAUSATION

The day is pretty well past, so the writer likes to believe, when the sociologist's interpretation of social behavior can be character-

ized as a narrow environmental determinism. Certainly it is not reasonable in the light of contemporary enlightenment in the social and psychological sciences to conceive of man's conduct as a mere subjective reflection either of the culture in which he lives or of the social groups and institutions that surround him. Man is no inert mass clutched and manipulated by social forces. Sociology is characterized, more perhaps than the other behavior sciences, by its integrative orientation: It conceives individual and social response as the consequence of a great complex of forces. It holds that the knowledge of contemporary science must be coordinated to discover the multiple and interlocking strands of influence that motivate conduct. Genetics and human biology, individual and social psychology, sociology and social work, psychiatry and psychoanalysis, ethnology and human geography, law and jurisprudence—all these and other specialized fields of knowledge provide avenues of insight into human behavior generally and into delinquency in particular. Unfortunately each has tended, in part because of the effects of professional specialization and language barriers, to underestimate the significance of the associated sciences and to exaggerate the role of its own discipline. The quest for etiological understanding has been characterized too much by narrow disciplinary autonomy of research investigation, too little by mutual exploration.

Contemporary criminological inquiry promises more rapid development in the future as authorities of diverse specializations who are united in their common interest in the offender come together in mutual effort to circumvent the barriers that are erected by their varying methods, hypotheses, and language differences. Thus they may derive increasing clarification from the diverse instruments of investigation that they employ. To some extent, too, the etiologists have been associating in research teams with the specific purpose to coordinate technique and observation. The armchair philosopher and the prima donna researcher are not extinct species by any means, but it is clear that the more realistic and meaningful investigations of the coming generation will derive from integrated, large-scale research that trans-

cends the narrow limitations of a single disciplinary orientation. More rapid progress in the discovery of behavior dynamics may come too from the trend toward investigating the genesis of particular types of delinquency. In the past the lumping of all types of offenders into a common class in the attempt to determine the causes of delinquency in general has proven a largely futile enterprise, for it appears that delinquents may differ as much from each other as they do from the nondelinquent. We should learn more from the effort to discover the likenesses and differences among offenders whose delinquent behavior is similar. Further light may come, too, from attempts to discern the variations in delinquent behavior among individuals who display essentially similar personal and social qualities.

There are certain types of influence that are viewed by the sociologist as especially important in the production of delinquency. Among these are the forces of cultural conditioning—forces that carry some measure of impact upon the total population. Along with other types of individual and social pathology, delinquency may be interpreted as a consequence in part of the rapidly changing, conflicted, materialistic, and competitive culture that surrounds us. We live in a climate that promotes emotional insecurity and strain among us all. The contemporary culture is also characterized, in part because of its dynamic and poorly integrated character, by a severe decline both in the norms and the sanctions of morality. The delinquent, it appears, is commonly one who has borne too heavily the crush of these cultural forces. He is greedy for personal and material success but without talent to achieve it. He lacks a firm set of standards to guide his quest for status. He is contemptuous of constituted authority and the penalties it threatens for his wrongdoing. He seeks satisfactions and security with others who have similarly evaded a largely ineffectual system of social control.

To express the matter somewhat differently, the pressures of culture operate differentially within the community. In areas of cultural backwash there are concentrations of marginal individuals who have escaped the discipline of the dominant and traditional

mores, boys who have identified instead with the reactive, antisocial standards of their minority. The delinquent may be very well adjusted to this subcultural stratum in terms of his personal stability and the satisfaction of his felt needs. Both his personal integration and the solidarity of his group may be reinforced, indeed, by the threatening coercions of "respectable society." Some offenders—and these are generally better subjects for reformatory influence—are torn between the conflicting standards of the majority and the recalcitrant minority.

The delinquent is no simple product of cultural determinism, however. On the contrary, the quality of an individual's response to the culture is itself determined by the social situations that surround him and to which he reacts. His experiences particularly in the "primary groups," the family and neighborhood, and to some extent in the school and church, mold the pattern of personality that he expresses in his maturing relationships and in his social roles. The sociologist and the psychiatrist have been essentially in agreement, it appears, in their recognition of the exceedingly significant part the family plays in its effect on the early development of the child. They have differed mainly in the relative emphasis of the latter upon the emotional responses of the individual and the sociologist's stress upon the nature of the group itself.

It appears that there have been oversimplifications by each group. There has been an unfortunate inclination among sociologists and social workers—some even today—to assume that the family imposes a uniform impact without regard to individual variation, that, for example, the broken home or a lack of adequate family income will have similar influence on different youngsters. The result of this lumping tendency has been to confuse our thinking about etiology. There has been a growing tendency, however, to recognize that the effect of a particular experience or social influence in the family is highly specific to the individual, his personality pattern, and his past experience. Kimball Young has stressed the "personal-social" relationships out of which individuation in response occurs, and Sheldon Glueck has recently reemphasized the im-

portance of the "under-the-roof culture" in differentiating the responses of individuals to similar situations.

Unquestionably very many poorly adapted youngsters reflect through their behavior the effects of today's unstable family system, the insecurities, rejection, and poor integration of values that are found in varying measure in all families in our culture. There is near universal recognition of this among students of human behavior. It is in the subtleties of the process that we need clarification: Why do some children draw strength from family adversities? What accounts for the widely varied reaction patterns observable in specific types of delinquency, and in suicide, alcoholism, psychosis, etc.? When a defective family situation is found to have preceded the development of delinquent behavior, when is it justifiable to infer a significant relationship between the two? The further question arises, too, as to the extent to which effective treatment may be carried on in the absence of thorough, accurate knowledge of cause. It appears that some types at least of treatment (medical and educational, for example) may be usefully employed without etiological certainty, as they are in other fields of pathology. In fact, achievement in the treatment of delinquents has moved ahead in the face of etiological confusion. However, it seems clear that treatment should become increasingly efficient and economical as more detailed knowledge of causal process develops.

To summarize briefly the view we have expressed on causation, it appears that to comprehend the motivation of behavior the complexities of both the particular individual and the specific situation must be understood. This response of individual to situation is predicated in every instance upon a highly complex dynamics: upon biological factors (hereditary, maturational, and endocrinological, for example), upon personality factors (including temperament, mood, attitudes, and emotions, as well as the psychosexual history and ego structure stressed by many psychiatrists), and upon the infinitely varied social and cultural variables on

which sociologists, anthropologists, social workers, economists, political scientists, and other specialists have concentrated. We have noted the severe limitations of our experience in coordinating these varied influences, the narrowing effect of professional training and of the theoretical orientations associated with it, and the errors that arise so easily from attempting to trace an event back to its complicated sources, many of which may be concealed and unknown. The writer believes that as a consequence of these difficulties we must be most careful and tentative in our inferences about causation and we should depend increasingly upon the coordinated efforts of differently trained investigators.

As to the future of our work, it appears most unlikely that we shall come to experience any scarcity of delinquent subjects to observe. So long as our culture is characterized by complexity and conflict, by a level of development that goes beyond the capacity of many individuals to effect adequate adjustment, it is inevitable that the problem of delinquency and other pathologies must continue with us. Though we may attain some increasing success in discovering youngsters in need of help before they get into trouble and in applying palliative remedies to them, it appears at best most unlikely that we can come to grapple very effectively with the fundamental personality and social problems in modern society. These disorders are as natural a by-product of our social organization as are the material achievements we attain. And, in effect, we prefer our social problems to the consequences of deliberate and heroic efforts so drastically to change the culture that man could live in uncomplicated adjustment to an uncomplicated world. Short of atomic devastation, we shall undoubtedly persist in the social conflicts and complexities that entail numerous individual failures of adjustment. The social sciences—and I dare say psychiatry—promise no more than a limited efficiency in patchwork on problems that grow perceptibly greater each decade.

PARENTAL DEPRIVATION AND THE "BROKEN HOME" IN DEMENTIA PRÆCOX AND OTHER MENTAL DISORDERS¹

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I. PREVIOUS STUDIES

A recent study by Lidz and Lidz(1) of 50 young schizophrenic patients appeared to establish a high incidence of parental deprivation and broken homes in the family background of these individuals. Thus 20 of these patients (40%) had been deprived of at least one parent by death or permanent separation prior to their 19th birthday. In a group of older schizophrenic patients, 36% had suffered the loss of at least one parent within the same temporal period. In contrast, the incidence of deprivation was 20% in a group of 50 depressed patients and 17.4% in a control group of 69 medical students. The frequency of multiple grossly abnormal parental influences during the childhood of these schizophrenic patients was also emphasized. Although the authors acknowledged the implausibility of a direct causal relationship between parental deprivation and the production of dementia præcox, they suggested, nevertheless, a correlation between the degree of abnormality of the early environment and the severity of the later-developing emotional illness. It is also noteworthy that the family histories of their patients were replete with occurrences of psychoses or other psychiatric abnormalities, and the authors acknowledged that their data might also be interpreted as indicating the hereditary nature of the instability of schizophrenic patients. Irrespective of the implications or emphasis of this report, the recorded data indicated that the incidence of parental deprivation and broken homes is significantly higher in schizophrenic patients than in normal subjects or in individuals suffering from manic-depressive psychoses.

¹ Read at the 107th annual meeting of The American Psychiatric Association, Cincinnati, Ohio, May 7-11, 1951.

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A recent communication in the *Journal of the American Medical Association*(2) stated, without reference to specific supporting data, "The cause of schizophrenia is not known, but the incidence of this mental illness in disturbed or broken homes is much greater than it is in normal homes."

Actually, statistical evaluation of this problem has been extremely meager. Despite the statement by Lidz and Lidz that "a statistical or semistatistical survey cannot afford an understanding of the developmental dynamics gained through the careful study of individual cases," it is apparent that scientific theories cannot be validated without adequate quantitative data based on statistically significant samplings.

The recent literature offers only one other direct contribution concerning this problem. As part of a general study on hereditary and environmental factors in the causation of manic-depressive psychoses and dementia præcox, Pollock, Malzberg, and Fuller(3) recorded parental deprivation in 38.3% of 175 schizophrenic patients and in 16.7% of 155 individuals with manic-depressive psychoses. However, there was no comparison with data on control subjects.

II. PROBLEM OF "CONTROLS"

Although dealing chiefly with the question of proper evaluation of therapy, the general problem of adequate controls in medical investigations has been clearly emphasized in a recent study(4). Previous data concerning the incidence of parental deprivation in control subjects are limited and conflicting. The study by Lidz and Lidz indicated the occurrence of deprivation in 17.4% of a relatively small control group comprised of medical students. It is somewhat questionable whether such a culturally and economically preselected group can be regarded as a satisfactory control population.

A recent article by Prout and White(5),

dealing with the mothers of 25 schizophrenic patients and the mothers of an equal number of normal males, indicated that 28% of each maternal group had suffered parental deprivation prior to their 15th birthday. Although these data are also limited numerically, they point to a definitely higher incidence of parental deprivation in the general population than was assumed by Lidz and Lidz.

Madow and Hardy (6) recorded data from several sources that implied the occurrence of broken homes in 11 to 15% of children prior to the 16th birthday. However, the

studied in a group of neurotic students observed in the neuropsychiatric clinic of the student health service at UCLA and in a control group of normal students at the same university. It was found that 19.2% of the control group had suffered the loss of at least one parent by death, 13.5% had experienced separation of the parents, and 2.7% had one "mentally ill" parent, prior to the 22nd birthday. The precise role of the last-named condition in disruption of the home or parental deprivation was not clearly stated; however, it is apparent that 32.7 to 35.4% of the normal or control group of

TABLE 1
DATA ON PARENTAL DEPRIVATION IN CONTROL SUBJECTS

Author	Year reported	Total No. in group	Character of group	Incidence of deprivation
Preston & Shepler.....	1931	83	3rd and 5th grade school children	14%—at approx. 8-10 years of age. (Prorated—approx. 28% prior to 19th birthday.)
Ingham	1949	370	College students	32.7-35.4% prior to 22nd birthday.
Lidz & Lidz.....	1949	69	Medical students	17.4% prior to 19th birthday.
Prout & White.....	1950	50	Adult females	28% prior to 15th birthday.
Oltman, McGarry, & Friedman.	1951	230	Employees at state hospital	32.2% prior to 19th birthday.

data from which their conclusions were derived were not entirely clear. For example, Preston and Shepler (7) were quoted to the effect that 14% of a group of normal school children came from broken homes. However, one notes that these children were in the 3rd and 5th grades of school; i.e., they were approximately 8 to 10 years of age. Presumably, therefore, the incidence of deprivation might be doubled by the time the members of the group reached their 19th birthday. Madow and Hardy also quoted a personal communication from the National Committee for Mental Hygiene and the Family Welfare Association of America that indicated that, in 1930, 8.1% of children under 16 were orphans and an additional 3% came from broken homes. There was no specific qualification of the term orphans. A recent communication (8) from the National Association for Mental Health, successor to the National Committee for Mental Hygiene, stated that they had no available information concerning this problem.

A recent study by Ingham (9) has furnished valuable data in this regard. In this investigation various family influences were

students suffered parental deprivation or broken homes prior to the 22nd birthday. It must be recalled, moreover, that all these subjects were college students; therefore, they came, presumably, from homes of superior economic and cultural background. It appears that Ingham's statistics concerning parental deprivation in normal subjects correspond quite closely with the incidence that we observed in our control group, particularly in view of the relatively poorer economic and social level from which our control individuals stemmed.

Our comparative data on this subject are summarized in Table 1. The majority of reports appear to indicate the presence of parental deprivation in approximately 30% of control subjects prior to their 19th birthday.

III. MATERIAL

The material for this study was obtained from the case histories of patients admitted to the Fairfield State Hospital during the past several years. Cases were entirely unselected except with respect to age. Patients over 50 years of age at the time of admission

to the hospital were excluded as it was considered that the informants' knowledge of events long past would not be sufficiently accurate. Furthermore, this enabled the age distribution in nonschizophrenic groups to correspond more closely with that of the schizophrenic patients.

Our control group was comprised of hospital employees from whom the desired information was obtained by means of an anonymous questionnaire. Despite certain limitations of this questionnaire method, there is no reason to question the accuracy of such purely factual data. No chronological limit was placed on the control group as it was considered that the information submitted by them would be valid irrespective of the age of the individual. In any event, only

loss or deprivation of a parent prior to the subject's 19th birthday. It was felt that consideration of factors such as instability, hostility, and other unusual attitudes of parents required multiple subjective interpretations that would not be scientifically accurate or capable of statistical evaluation. With respect to other definitions, it might be indicated that subjects whose deceased parent was later replaced by a step-parent were included in the parentally deprived group; brief, temporary separations between parents were not regarded as constituting a deprived state for the child.

IV. RESULTS

The occurrence of parental deprivation, *i.e.*, the loss of at least one parent prior to the

TABLE 2
TOTAL NUMBER OF CASES STUDIED

Group	No.	% of total
Dementia præcox	600	41.3
Controls	230	15.9
Alcoholic states	200	13.8
Psychoneuroses	139	9.6
Manic-depressive psychoses ...	115	7.9
Psychopathic personality	90	6.2
Other psychoses	77	5.3
Totals	1,451	100.0

10% of the control group was over 50. Otherwise, the age distribution of the control group was very similar to that of the patients. We believe that the economic, educational, and cultural backgrounds of the 2 groups were also quite similar.

The total number (1,451) and distribution of individuals included in this study are indicated in Table 2.

There are 600 cases of dementia præcox, comprising some 41% of the entire group, an approximately equal number of cases of other psychiatric conditions, including manic-depressive psychoses, alcoholic states, psychoneuroses, psychopathic personalities, and "other psychoses," and 230 control subjects. It might be indicated that the group of "other psychoses" was comprised chiefly of conditions associated with organic brain disease or metabolic disorders such as hypertension, arteriosclerosis, brain tumor, syphilis of the central nervous system, epilepsy, etc.

The study was limited to analysis of actual

TABLE 3
INCIDENCE OF DEPRIVATION

	Total No.	Deprived	
		No.	%
Dementia præcox	600	205	34.2
Controls	230	74	32.2
Alcoholic states	200	62	31.0
Psychoneuroses	139	68	48.9
Manic-depressive psychoses ..	115	39	33.9
Psychopathic personality ...	90	43	47.7
Other psychoses	77	27	35.1

19th birthday, in our group is indicated in Table 3.

It is evident that the incidence of deprivation is essentially identical among individuals suffering from dementia præcox, manic-depressive psychoses, alcoholic states, "other psychoses," and the control group. There is no statistically significant difference ($P=.40$) between the incidence of deprivation in dementia præcox observed in this study (34.2%) and the incidence recorded by Pollock, Malzberg, and Fuller in a smaller group of patients (38.3%). Table 3 indicates that increased incidence of deprivation was found in only 2 conditions—psychoneurosis and psychopathic personality. Application of the Chi-square formula to the data in Table 3 indicates a high level of reliability ($P<.01$). Further discussion of these data will be presented later.

Our next area of interest was concerned with the factors that caused parental deprivation. Causative agents were divided into the

following 3 categories: (1) death, (2) divorce, separation, or desertion,² and (3) psychosis resulting in long-term hospitalization, or suicide. Tabular summary of the results is presented in Table 4.

Several features are noteworthy. In the control group there was no instance of deprivation due to psychosis and the incidence of deprivation due to separation of parents was low. Conversely, death of the parent

interesting to note that psychosis was a significant cause of deprivation in 2 groups only—dementia præcox and manic-depressive psychosis. Divorce, separation, or desertion occurred most often in the parents of psychopathic personalities; the next highest frequency of this factor occurred in the psychoneurotic group. It might also be indicated that illegitimacy, foundling state, or desertion by both parents were also most frequent in

TABLE 4
CAUSES OF PARENTAL DEPRIVATION

	Death		Divorce, separation or desertion		Psychosis	
	No.	% of deprived group	No.	% of deprived group	No.	% of deprived group
Dementia præcox	114	55.6	58	28.3	33	16.1
Controls	61	82.4	13	17.6	0	0
Alcoholic states	48	77.4	11	17.7	3	4.8
Psychoneuroses	43	63.2	25	36.8	0	0
Manic-depressive psychoses	31	79.5	2	5.1	6	15.4
Psychopathic personality	19	44.2	21	48.8	3	7.0
Other psychoses	18	66.7	9	33.3	0	0

TABLE 5
AGE OF PATIENT AT TIME OF DEPRIVATION

	0-6 Years		7-12 Years		13-18 Years	
	No.	% of deprived group	No.	% of deprived group	No.	% of deprived group
Dementia præcox	97	47.3	65	31.7	43	21.0
Controls	27	36.5	25	33.8	22	29.7
Alcoholic states	20	32.2	21	33.9	21	33.9
Psychoneuroses	29	42.7	22	32.4	17	25.0
Manic-depressive psychoses	18	46.1	16	41.0	5	12.9
Psychopathic personality	22	51.2	13	30.2	8	18.6
Other psychoses	12	46.2	9	34.6	5	19.2

was the outstanding cause of deprivation. However, in the schizophrenic group death loomed less significantly as a cause of parental deprivation while separation and psychosis assumed much more prominent roles. (This does not imply that there were actually fewer deaths among the parents of schizophrenic patients. Psychosis or separation occurred earlier and, therefore, constituted the primary cause of deprivation in many cases. Undoubtedly some of these divorced or psychotic parents died later so that the ultimate death rate of the parents in all groups was, presumably, similar.) It is

the group of psychopathic personalities. The statistics in this area for the alcoholic patients are very similar to those of the control group; we shall find that this is also true in other areas of comparison. Application of the Chi-square formula to the data in Table 3 indicates a high level of confidence ($P < .01$).

Three categories were also established with respect to age of the patient at the time of deprivation, namely: 0-6 years, 7-12 years, and 13-18 years. Summary of the data in this regard (Table 5) indicates no significant difference among the various groups for this factor.

There appears to be some tendency for deprivation to occur less often in the earliest

² Illegitimacy of the child or foundling state was included in this category.

chronological period (0-6 years) and, conversely, more often in the latest period (13-18 years) among the alcoholics and the control group. However, Chi-square formula fails to reveal any statistical validity ($P=.40$).

Investigation was also made of the incidence of loss of father, mother, or both parents. Results are summarized in Table 6.

Deprivation of the father, either by death or separation, occurred more frequently than loss of the mother in all groups. This observation reflects, of course, such factors as

fore the age of 20 than in those who became ill thereafter. Application of Chi-square formula to Table 7 indicates a fairly high degree of reliability ($P=.08$). Further discussion of this matter is presented later.

The final point of inquiry was concerned with the incidence of frank psychiatric abnormalities in the siblings of deprived and nondeprived patients. It appeared logical to conclude that, if deprivation is a potent factor in the causation of dementia præcox and other psychiatric illnesses, the incidence of psychiatric disease should be higher in the

TABLE 6
PARENT LOST

	Father		Mother		Both parents	
	No.	% of deprived group	No.	% of deprived group	No.	% of deprived group
Dementia præcox	118	57.6	65	31.7	22	10.7
Controls	39	52.7	24	32.4	11	14.9
Alcoholic states	37	59.7	15	24.2	10	16.1
Psychoneuroses	42	61.8	16	23.5	10	14.7
Manic-depressive psychoses	19	48.7	17	43.6	3	7.7
Psychopathic personality	22	51.2	11	25.6	10	23.2
Other psychoses	17	63.0	6	22.2	4	14.8

more severe industrial hazards for the male sex, greater social liberties and consequently more frequent desertion of families by husbands, and the customary mores that result in more frequent retention of children by the mother in cases of divorce or separation. Loss of both parents appears to occur somewhat more often in the psychopathic individuals than in the other groups; however, application of the Chi-square formula to the distribution in Table 6 fails to indicate statistical validity ($P=.50$).

Relationship of deprivation to age at onset of illness constituted the next point of inquiry. This area of investigation was confined to the schizophrenic group because of numerical limitations of the other groups and the difficulty in determining the temporal point of onset of conditions such as psychopathic personality, alcoholism, and psychoneurosis. Results are summarized in Table 7.

After the age of 20 there is no significant correlation between deprivation and age at onset of illness. However, there appears to be a higher incidence of parental deprivation in individuals whose symptoms appeared be-

TABLE 7

RELATIONSHIP OF AGE AT ONSET OF SYMPTOMS TO DEPRIVATION (DEMENTIA PRÆCOX ONLY)

Age at onset of symptoms	Total No. in group	Deprived		Nondeprived	
		No.	% of group	No.	% of group
Under 20 ..	81	38	46.9	43	53.1
20-24	150	48	32.0	102	68.0
25-29	135	48	35.5	87	64.5
30-34	104	26	25.0	78	75.0
35-39	56	15	26.8	41	73.2
40-44	23	7	30.4	16	69.6
45-50	7	2	28.6	5	71.4
Unknown ..	44	21	47.7	23	52.3

deprived patients' siblings, who would also have suffered deprivation, than in the siblings of nondeprived patients. Summary of the data in this regard (Table 8) reveals that this is not true as the incidence of various types of psychiatric abnormalities is almost identical in the siblings of both deprived and nondeprived groups. Of further interest is the observation that the incidence of frank psychosis in siblings is highest in the siblings of the schizophrenic and manic-depressive patients. Equally noteworthy is the observation that the type of illness in the siblings

parallels that found in our patients. Thus dementia præcox occurred most commonly in the siblings of our schizophrenic patients; some 50% of the psychoses occurring in the siblings of schizophrenic patients were officially diagnosed as dementia præcox at this, or other hospitals. Undoubtedly, many other siblings who were psychotic but whose diagnosis was not definitely known also suffered from dementia præcox. In the affective group, some 40% of the siblings who were

ents, complete upheaval of homes, and other catastrophic environmental factors were rampant. Recently, Kalinowsky (10) has also commented on the lack of increased incidence of dementia præcox in the civilian population of Europe during the last World War despite the obvious deprivations—parental and otherwise—that the children and adolescents underwent during some 6 years of combat. One could hardly establish a better experimental milieu than this for the test-

TABLE 8
INCIDENCE OF NEUROPSYCHIATRIC CONDITIONS IN SIBLINGS

Diagnosis	Siblings of deprived group		Siblings of nondeprived group	
	No.	% of group	No.	% of group
A. Incidence of psychosis in siblings				
Dementia præcox	26 *	12.7	52 *	12.9
Manic-depressive	9	23.1	13	17.1
All other patients	9	4.0	18	5.9
Controls	0	0	1	0.6
B. Incidence of other conditions (exc. alcoholism) in siblings				
Dementia præcox	7	3.4	14	3.5
All other patients	9	3.8	12	3.1
Controls	1 †	1.4	0	0
C. Incidence of alcoholism in siblings				
Dementia præcox	1	0.5	1	0.5
Alcoholic states	6	9.7	14	10.1
All other patients	4	2.3	3	1.2
Controls	0	0	0	0

* Approximately 50% were known cases of dementia præcox.

† One sibling mentally defective following an acute childhood illness.

psychotic suffered from known manic-depressive illness or had committed suicide. On the other hand, alcoholism was the most frequent disorder in the siblings of alcoholic patients.

DISCUSSION

The data presented in this study do not confirm previous tentative observations that deprivation of parents occurs more frequently in schizophrenic patients than in normal subjects or individuals suffering from other types of psychoses. Our observations concerning this particular factor are in agreement with reports and impressions that indicate that the occurrence of dementia præcox is unrelated to known external stresses and deprivations. For example, it has been generally recognized that the incidence of schizophrenia in Europe did not rise following the first World War when deprivation of par-

ing—and negation—of any theory concerning the relationship between dementia præcox and parental deprivation, or any other stressful environmental factor, in early life. Our present statistical data serve to uphold the theory, which will be elaborated during this discussion, that dementia præcox is a disease based primarily on heredo-constitutional factors.

It is interesting to note that the incidence of deprivation in our schizophrenic patients is not only closely similar to that of the control group but also almost identical with its occurrence in the group of "other psychoses." As already indicated, the great majority of this latter group was composed of individuals whose illness was related to definite somatic or metabolic disturbances. On the other hand, increased incidence of deprivation is present in 2 conditions in which the etiological importance of psychogenic and environ-

mental factors has been more generally accepted, namely psychoneurosis and psychopathic personality. The high incidence of parental deprivation in the latter condition has been observed by many investigators. In a previous report (11) we recorded deprivation in 47% of a group of criminal psychopaths—an incidence almost identical with that observed in the present study. Similar findings have been reported in psychoneurotics. Thus, at least 52.1% of Ingham's group of neurotic college students had parental deprivation prior to the 22nd birthday (21% due to death and 31.1% to separation of parents). These statistics correspond closely with our own. Others (6) have also found higher incidence of deprivation in neurotics than in normal subjects, although not so high absolute figures as those of Ingham and this study. This is not to imply that constitutional factors are not etiologically important in these 2 groups of psychiatric illnesses also. However, the etiological significance of environmental factors in these 2 psychiatric abnormalities may be granted much more readily than in the case of the major psychoses.

It is interesting to observe that the incidence of deprivation was not increased in alcoholics and that, in other respects also, the statistics for this group were not comparable to those found in psychoneurotics and psychopathic personalities. The implications of this observation are being pursued further by a more intensive study of the alcoholic group.

Consideration of the causes of deprivation leads to further interesting formulations. As previously noted, mental illness in the parents constituted a significant factor in deprivation in the 2 major psychoses—dementia praecox and manic-depressive illness. In addition, divorce, separation, or desertion was also more frequent in the schizophrenic group than in the controls. These data would indicate that mental and emotional instability, appearing either as frank psychosis or as instability that interfered with normal interpersonal relationships, are present frequently in the parents of schizophrenic patients. Lidz and Lidz also recorded a high incidence of psychosis or severe instability in the parents, and other relatives, of their

schizophrenic patients, and tended to place emphasis on the unfavorable environmental situations that these unstable parents established. To regard the development of dementia praecox in our schizophrenic individuals as merely the result of a nonspecific response to the unsatisfactory environmental influences created by their unstable parents is to overlook the fact that similar unsatisfactory environmental milieu engendered by the unstable parents (as indicated by their high rate of divorce, separation, or desertion) of the psychoneurotic and psychopathic personality individuals did not produce a significant incidence of dementia praecox in those offspring. It is also pertinent to record here the results of a study by Peck *et al.* (12) on a 2-year project of group therapy for the parents of schizophrenic children. These authors found that in the majority of cases there was no evidence of the child's having experienced gross mishandling or severely traumatic relationships; nor was there any evidence for a characteristic patterning in the parent-child relationship.

As this study was devoted primarily to the problem of parental deprivation, statistical data on hereditary influences in general will not be subjected to specific analysis. This procedure will be postponed for future reports. However, a few brief comments in this direction may be of interest. Of our 600 schizophrenic patients, there were 72 cases, or 12%, in which at least one parent suffered a frank psychosis. There were 36 additional cases, or 6%, in which at least one parent had some other psychiatric abnormality such as epilepsy, mental deficiency, etc. In the control group of 230 individuals there was only one instance of a psychotic parent—an incidence of 0.4%. Similar data were recorded by Bond (13) who found no psychoses in the parents, and only 2 psychoses in the grandparents, of 63 nonpsychotic, prominent college students (members of student councils), as compared to 25 instances of psychosis in the parents and grandparents of 60 students who became mentally ill while attending college.

It has already been noted that the incidence of psychoses in the siblings of our patients was also uninfluenced by the presence or absence of parental deprivation. The distinct

tendency toward specificity of the psychiatric abnormality occurring in siblings and patients also supports the etiological importance of heredo-constitutional factors in the major psychoses, dementia præcox and manic-depressive illness. With respect to the specificity of occurrence of alcoholism in the siblings of our alcoholic patients, one must acknowledge that currently accumulated data are too inadequate to permit the formulation of any theory concerning possible constitutional factors in alcoholism, as suggested by Smith (14).

We regard the data presented here as additional evidence in support of the theory we have entertained for some time, namely that dementia præcox is a biological deficiency disease based on heredo-constitutional factors. This is very similar to the concept expressed by Hoskins (15), who stated that "... the schizophrenic psychosis represents an end result of a generalized failure of adaptation that arises from defective evolution of the maturing processes." The concept of dementia præcox as a biological deficiency disease leads to interpretation of the psychological, emotional, and social abnormalities of the schizophrenic as symptoms secondary to the primary, innate deficiency. Hoskins has expressed this succinctly in the following terms, "The accessory symptomatology of the psychosis can be regarded as constituting secondary adaptations to the difficulties arising out of the primary defect." The poor adaptative responses by the schizophrenic individual stem from his own inner biological deficiency rather than from any unusual stresses in his environment. The stress, with resultant failure of the individual, is within his own fabric and not in life's impingements on him.

It seems also reasonable to assume that the schizophrenic individual with his innate biological deficiency will break down more readily in the presence of undue stress, just as a bridge, for example, with defective materials will collapse more quickly under heavy traffic than it would under normal traffic. This may be an explanation of the observation that those schizophrenic patients who exhibited their illness early, *i.e.*, before the age of 20, had parental deprivation in a higher proportion of cases than those whose

symptoms apparently began after the age of 20. It is possible that parentally deprived individuals with greater stresses and less supervision and protection may exhibit the results of their inadequacies, on a clinically observable level, earlier than nondeprived individuals. However, this is merely a tentative formulation. The statistical data in Table 7, which stimulated this particular discussion, may be merely a fortuitous distribution, as the Chi-square formula indicated that similar distributions could appear by chance once in 12 or 13 samplings ($P = .08$). The rather fixed temporal pattern of onset of illness in the various subgroups of dementia præcox, *i.e.*, early onset in simple and hebephrenic forms and late onset in the paranoid subgroup, seems to point to some innate characteristics that determine the age at which the illness appears clinically. Information concerning this entire problem is very limited at present. We are essentially ignorant of the factors that determine when the clinical manifestations of dementia præcox will appear, just as we are unaware of the factors that influence the overt onset of other metabolic or degenerative diseases.

It is interesting to speculate briefly on possible reasons for the marked resistance to the concept of dementia præcox as a disease process based on abnormal heredo-constitutional factors within the individual. Despite evidence in this direction, which has mounted steadily since Kraepelin's early formulations, there has been continued resistance to acceptance of supporting data as they have become available, and reliance instead on vague formulations involving psychogenetic interpretations. As Kallmann (16) has so keenly implied, this may be due in part to "... the traditional superiority in articulateness of the environmental schools in power." As Slater (17) has indicated in his admirable summary of psychiatric genetics, "It is a sign of bad omen that it is possible for text-books of clinical psychiatry to appear, with claims for comprehensiveness, in which no mention is made of the established facts of genetics and of the hereditary element in mental disorder." He goes on to assert, "... we are witnessing the manifestation of an anti-scientific tendency which is winning an increasing num-

ber of supporters. The customary canons of scientific reasoning are ignored by these schools." We believe that this attitude may be due in part to the concept that acceptance of a theory of etiology of mental illness based on heredo-constitutional defects in the biology of the individual would lead to a state of therapeutic nihilism. We regard this as a naive concept. Certainly many of the diseases that have constituted major interests in the field of internal medicine, for example, are based on heredo-constitutional factors; yet this has not limited in any degree intensive investigations into the physiological pathology and therapeutics of these diseases. Similarly, we must employ every service of the biochemist, physiologist, endocrinologist, pathologist, microchemist, statistician, and workers in all other pertinent branches of the basic and clinical medical sciences if we are to solve the complex problems of dementia præcox. Psychiatrists have remained too long in their isolated, semantically encircled ivory tower.

SUMMARY

The incidence of parental deprivation and "broken homes" was found to be very similar among individuals suffering from dementia præcox, manic-depressive psychosis, alcoholic state, and "other psychoses," and in normal control subjects. However, it was significantly higher in psychoneurotics and psychopathic personalities. With respect to causes of deprivation, it was noted that mental illness constituted a significant source of parental deprivation in 2 groups only—dementia præcox and manic-depressive psychosis. Divorce, separation, or desertion occurred most frequently in the parents of psychopathic personalities and psychoneurotics. Statistics concerning the age at which deprivation occurred and the parent lost did not exhibit any significant trend. There was apparent tendency for increased incidence of parental deprivation in schizophrenic patients whose illness occurred before the age of 20. The incidence of various types of psychiatric abnormalities was almost identical in the siblings of both deprived and nondeprived patients. The type of psychiatric illness in siblings paralleled that found in the hospitalized patients. It is concluded that the inci-

dence of dementia præcox is unrelated to known external stresses or deprivations. These data lend further support to the etiological importance of heredo-constitutional factors in the development of the major psychoses. Dementia præcox is regarded as a biological deficiency disease based on heredo-constitutional factors. This concept should not lead to an attitude of therapeutic nihilism.

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DISCUSSION

DR. ISADORE TUEBK (Catonsville, Md.).—This paper is a serious contribution to the investigation

of the etiology of schizophrenia. The authors, through a very meticulous statistical study, have clarified conclusively, it seems, one aspect of this problem, namely, the significance or lack of significance of gross parental deprivation in the production of schizophrenia.

The gist of the paper is expressed in their conclusions that deprivation of parents does not occur more frequently in schizophrenic patients than in normal subjects; that is, the appearance of dementia præcox is unrelated to known external stresses and deprivations, and it is their impression that it is a disease based primarily on heredo-constitutional factors.

The problem of the etiology of schizophrenia has been investigated by other workers from many aspects through the studies of monozygotic twins, the biochemical physiological manifestations of the schizophrenic, and through detailed analytic studies of adult schizophrenics. Stress upon psychodynamic factors and upon organic heredo-constitutional factors has, of course, varied considerably from investigator to investigator.

Dr. Kanner, in a recent discussion with the writer, made the statement that when he first became familiar with autistic children he felt that constitutional, hereditary, organic factors must be all-important. Then, as he became more acquainted with the personality characteristics of the mothers of these children, he was more impressed by the psychodynamic factors. More recently he has seen what appeared to be typically schizophrenogenic mothers whose offspring were not schizophrenic, so that the question again is wide open.

Rene Spitz, in his recent work in infant psychiatry, has opened an entirely new vein of investigation, revealing the dramatic effects upon the baby of the psychological environment in which he exists. This type of investigation may well prove to be invaluable in solving the perplexing problem of the genesis of schizophrenia.

If issue is to be taken with the conclusions of the writers of this paper, it necessarily is along the line that what they are describing is a gross physical deprivation, and that what is all-important for the baby, the young child, is the exquisitely significant interpersonal relationship between the child and the mother, the mother surrogate, or other early significant figures. Important factors might be the subtle rejection of the baby by the

mother, the complete refusal of the mother to permit individuality or independence to the child, and all the subtle interpersonal exchanges that take place in the shaping of the child's attitudes toward himself and the world. In the family each child's situation is a unique one, entirely unlike that of the other children.

Pearson in his textbook, *Emotional Disorders in Children*, in describing a schizophrenic child described the atmosphere of strict, cold routine totally devoid of warmth, in which the child was raised. This is similar to other cases of childhood schizophrenia where the same sort of mechanical routine was adopted in the raising of the baby.

How significant all these factors are still remains to be seen. Certainly one finds that schizophrenics respond to psychotherapy and recover, and schizophrenics respond to shock therapy and recover; on the other hand, numerous schizophrenics at present respond to no form of therapy available. The spectrum of schizophrenia includes a tremendous variety, shading off from those close to neurotics and others close to psychopaths. Perhaps the dynamics and genetics vary across this spectrum.

It is striking that gross parental deprivation is clearly manifest in the backgrounds of many criminal psychopaths. Where the rejection is so overt, so flagrant, so brutal, somehow there seems to be the capacity to retaliate in a socially hostile manner. With the schizophrenic this doesn't in general seem to be the case; but rather flight into unreality and fantasy is the rule. But even here one gets into confusing difficulties. How often does not the so-called criminal psychopath turn out to be a schizophrenic?

I'd like to raise some further questions—suppose one can in time prove the presence or absence of some specific constitutional hereditary factor in the schizophrenic. What contributions would such a concept make to preventive psychiatry? How would one detect the tainted child? What measures could be adopted in preventing schizophrenic illness? How would such a program differ from that inspired by the discovery of children early traumatized and rendered susceptible to schizophrenic illness?

Again I want to express appreciation for the opportunity of reading this paper and obtaining further clarification of some of the perplexing problems involved.

THE APPLICATION OF PRINCIPLES OF CHILD PSYCHOTHERAPY IN RESIDENTIAL TREATMENT¹

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Residential treatment at Child Guidance Home³ for emotionally disturbed children of the latency age is based on certain principles of child psychotherapy. The first such principle is that of the collaborative treatment of the child and his parents (in our clinic psychoanalytically oriented). Each child has a minimum of 3 psychotherapeutic sessions weekly with a psychiatrist, and each parent one with a psychiatric case worker or psychiatrist.

Besides this standard clinical tandem therapy, residential treatment includes the temporary separation of the child and his parents when their problems together have reached such an impasse that they cannot progress in individual treatment. Both need a period of relief from the tensions of seriously disturbed family relationships, and the child in residence has the opportunity for a new corrective living experience. Thus the twofold collaborative treatment becomes threefold and it is important to delineate the 3 separate but related spheres. To understand the similarities and differences in the areas and levels of therapy and to examine the origins and kinds of problems that arise involve a consideration of a second therapeutic principle, namely that therapy proceeds through the relationship between the child and his therapist. Within the security of the dependent relationship with the more emotionally mature therapist whom he trusts and imitates the child relives his unconscious conflicts with help in learning new and more realistic solutions. And through this corrective emotional experience he gradually gains

self-confidence and develops some insight into the nature and origins of his conflicts and their illogical, unsatisfactory defenses. In a sense the therapist reverses some of the mistakes unwittingly made by the parents.

But the child does not live in an exclusive relationship to his therapist. In contrast to adult patients he is still dependent upon his family for further growth. Even in residential treatment he cannot be treated as completely apart from his parents, whom he continues to see as indicated. He cannot maintain the improvement attained with the therapist or continue to progress unless the parents also gain some correction of their own unhealthy attitudes through guidance and education or preferably through some therapeutic modification of their own conflicts. The goal of collaborative treatment is to establish a more stable, happier family group.

While in residence the child not only has relationships with his therapist and parents, but he also has new experiences with residential workers who carry out many of the usual parental functions of child care. Because of the intimate living experiences having to do with eating, toileting, sleeping, playing, and learning, children will look upon these workers as parent figures.

Let us consider the process by which these new relationships supplement the usual individual therapeutic relationship. The residential experience does more than afford parents and child an opportunity to progress in their individual therapy by temporarily relieving the tensions between them. It is also therapeutic in a positive sense through the interpersonal relationships that create a therapeutic atmosphere. In fact, a most important component of treatment is the consistent, uninterrupted, daily, close relationship between the child and the residential worker, a relatively mature adult who is genuinely fond of children, capable of understanding their emotional needs and of feeling with them while at the same time remaining emo-

¹ Read in the Section on Child Psychiatry at the 107th annual meeting of the American Psychiatric Association, Cincinnati, Ohio, May 7-11, 1951.

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³ A joint activity of the Jewish Hospital Association, Community Chest of Cincinnati and Hamilton County, and Department of Psychiatry, College of Medicine, University of Cincinnati.

tionally a strong, helpful, and giving person. For the children's own gratifications rather than primarily for his own satisfaction the residential worker establishes security first for their dependent needs and then for their gradual strivings for growth and mastery. In a sense the worker maintains a benign hierarchy with the children through flexible and warmly spontaneous responses in meeting their psychological needs rather than by imposing rigid, impersonal rules for conformity of behavior. Like the psychiatrist, he permits and tolerates instinctual wishes and feelings. Even overt expression within limits appropriate for the child's psychological development is not only permitted but fostered and given direction. Behavior not grossly destructive to the environment nor harmful to himself or others is permitted. Destructive behavior that gives rise to anxiety, guilt, unhappiness, and certain social disapproval is firmly blocked in a kindly, protective manner. In this spirit the setting of limits and the redirection of impulsive energies give the child further security, gratification, and stimulation for growth and for learning the approved patterns of expression.

This process whereby the relationship between the child and an adult becomes therapeutic is stated as a third principle of psychotherapy: within the security of the therapeutic relationship the child's emotional development is recapitulated in a new, corrective manner for meeting his needs for both dependency and growth. It is effective in the more classical childhood neuroses with conflicts centered primarily at the oedipal stage when individual psychotherapy alone is employed. But children with greater disturbances in ego function and with marked pregenital fixations require repetitive demonstrations of their acceptance through important daily experiences especially those having to do with bodily functions. All children first gain security with adults by receiving concrete tangible evidence of acceptance through physical activities and care. Even in individual child therapy the therapist must stimulate a positive relationship by using his greater abilities in a manner helpful to the child. Anna Freud points out that he often courts the child's affection and confidence with activities and gifts, which

prove that he is both interesting and useful to the child.

Through the daily experiences residential workers have many opportunities to demonstrate to the child these concrete evidences of acceptance. As a result these children sometimes develop their first meaningful relationships in residence rather than in individual therapy.

For example, one seriously emotionally deprived girl⁴ became sullen and belligerent, resisting all friendly overtures with verbal and physical abuse when she was frustrated in having exclusive relationships with her psychiatrist and the workers. For months she watched from a distance while a worker affectionately cared for a younger psychotic child before she gradually allowed herself to have similar care. After provocatively testing the worker's interest in her, she gradually became very dependent on her, and like a much younger child she accepted physical care and affection especially at bedtime and bath time, when she spoke freely of her anger to her own mother and foster mother. She preferred the worker who like a good mother cared for her and gave her more than her psychiatrist whom she angrily compared to the controlling foster mother. She first came to therapy only when there was an abundant supply of cookies and candy. Months later, when she believed that the therapist like her mother and foster mother preferred boys, she again expressed her need for tangible proof of her acceptance: "If you really like me as a girl you will bring me the first tulip from your garden." Afraid to trust adults from whom she expected only rejection and injury she protected herself from close affectional ties with a hostile defense until she was convinced repetitively of her acceptance through many specific concrete experiences in a one-to-one relationship with the worker. Only much later could she similarly give up this defense with the therapist.

Understanding the child's unconscious conflicts and the meaning of his behavior, the worker functions primarily at an ego level. He provides a gratifying environment, opportunities for, and help in, learning approved methods of expression as the child is ready psychologically. The supporting and building of healthy defenses at the ego level in the area of the living experiences is the worker's chief task. Although education is a part of all child psychotherapy the psychiatrist in comparison to the worker is limited in this by less frequent contacts and

⁴ This case has been accepted for detailed presentation in the *American Journal of Orthopsychiatry*.

by the circumscribed interview situation with fewer opportunities in daily experiences.

The psychiatrist's primary task is to free the child of his internal need for symptomatic behavior, leading to an emotional receptivity for the educational work both in therapy and in residence. At the level of the unconscious he helps in the resolution of conflicts by making them conscious through clarification and carefully timed interpretations, especially within the transference relationship. At times he cautiously stimulates minimal, tolerable amounts of anxiety while at other times he alleviates it. In contrast, the worker does not provoke anxiety but tries to allay it through the current reality or through clarification, and he seldom if ever makes interpretations.

Occasionally it is indicated for the worker to deal more actively at a deeper level in helping the child. Sometimes he cannot alleviate anxiety through the current reality alone. In emergencies with group problems he may be unable to handle the disturbance at only the ego level. Or in a particular stage of treatment, for example, in a negative father transference with a male psychiatrist, the child may be able to speak more freely and work more actively therapeutically with a woman worker to whom he ascribes his feelings for his mother. The extent to which workers can helpfully go beyond the current reality depends not only on their special abilities, experience and understanding but especially on their particular personalities and relationships with the child. Such treatment by workers is done only in close collaboration with the psychiatrist as part of the total therapy.

This is illustrated in the case⁶ of Tom who was extremely fearful at bedtime. The worker was unable to allay his increasing anxiety that the Guidance Home would be atom-bombed or destroyed by fire when she referred to the reality of community protection, the strength of the building, the night watchman, or her presence all night in an adjoining room. In his panic Tom pointed out the sign on his door which read "Beware of Danger," and said he felt like breaking everything in sight. When he was concerned that the worker was frightened of him she quietly reassured him that she was not at all fearful, that he would not be permitted to destroy things or to hurt anyone, and that no one

would be permitted to harm him. Moreover no one would be angry or want to hurt him regardless of his wishes to destroy things. With this clarification of his own destructive feelings and his fears of retaliation along with reassurance about his own protection, Tom's anxiety gradually subsided. At bedtime he frequently dictated notes for his psychiatrist to the residential worker telling of his "deep, bad feelings of anger which he was trying to get rid of." This occurred during a period of hostile father transference to the psychiatrist, of whom he was very fearful. Gradually as the worker helped him in overcoming his anxiety about his own hostility, he turned back to the psychiatrist to work through these conflicts further and to receive help in learning how to become a man like him.

In this kind of treatment serious problems may arise if there are disturbed relationships between staff members. Competitive attitudes motivated by either excessive therapeutic ambition or by a desire to impress a supervisor may seriously impede the work with the child. With more progress in residence, the psychiatrist may react to his illogical feelings of failure by aggressively stimulating too much anxiety, or in his discouragement and frustration he may lose interest in further treatment. If a child initially shows therapeutic progress prior to observable changes in daily behavior, the workers in their disappointment may feel they are "mere nursemaids who do a clean-up job after the psychiatrists." In the ensuing conflict the child is caught in a triangular relationship with staff members whose countertransference problems create difficult treatment blocks.

When several children regularly refused to come to therapy despite the apparently active effort of workers to encourage and even lead them to the office, a worker reported that Billy had seemed frightened in coming through the small, dimly lit hallway. Laughingly she indicated that she understood this fear because she herself felt like turning in the opposite direction. On the other hand, she wondered if she could discuss with the psychiatrist some of her work during the time of the child's failed appointment. The worker herself wanted a close relationship with the therapist and in her rivalry with the children she was unconsciously fostering their resistance to therapy.

Difficulties in treatment can also arise if a psychiatrist and worker through lack of

⁶ This treatment was carried out by Dr. Louis J. Wise and Miss Bernice Crumacker.

understanding or countertransference attitudes are drawn into the child's attempt to alienate one from the other. This is apt to occur with the child who is divided in his loyalties to his parents especially those with marital problems. To avoid a repetition of the triangular family conflict, staff members must work together in the child's behalf.

For example, Mary, a 9-year-old girl with anorexia and a learning problem, remained home from school hidden for a long time. When found she asked to see her psychiatrist because of feelings of confusion "like two different malted milks in the same shaker at the same time." But she was fearful lest her favorite worker be angry or lonesome if she saw the psychiatrist. Together they reassured her that neither would be lonely or angry when she was with the other and that, as they did, she could like 2 different people at the same time just as she likes both chocolate and strawberry malted milk. Then with the psychiatrist alone she told of her fear of going to school because the principal and teacher might be angry or disagree about her. Immediately she told of her recent visit home when her mother, who had been nice and had kissed her, was angry at father and concerned that he would punish Mary because of her current school difficulties. She was worried because she dreamed of killing her mother and brother.

The psychiatrist gradually and carefully interpreted that Mary feared that school personnel or staff members would disagree about her, or be lonely or angry because of her feelings about her parents. With reassurance about her security with different staff members, she was helped to feel safe in liking both mother and father despite whatever troubles they had together. At Mary's request the psychiatrist returned her to the worker to review this understanding. After a repetition of this material with the worker alone who gave her special care and attention for the rest of the morning, she was able to return to school, commenting that she had learned she could trust both the worker and the psychiatrist. The staff members working together helped to correct some of the problems originating in her relationships with her parents who had been having serious marital conflict to the point of considering divorce.

Children gain security in learning that staff members to whom they have different relationships are working together in their interests. They feel secure in learning that in residence they will be helped to have gratifying experiences. They feel supported in learning that their parents too are having help with case workers or psychiatrists. And they look forward to regular therapeutic periods for receiving more specific help with their own problems in their "special confidential times with docie." This security for

the child in the different staff relationships is necessary in preventing confusion, difficult triangular problems, and dilution of therapy. It constitutes the very foundation for establishing a therapeutic atmosphere.

At first children frequently ask "who decides when we have a picnic; who will talk to my teacher about my arithmetic; who decides when I go home." These questions are answered best when each staff member consistently adheres to his position on the basis of thoroughly understanding and accepting his particular work, even though somewhat different from others, as worth while and important in the total treatment. This is accomplished only with resolution of problems in interstaff relationships. In residential treatment with 3 related patients (child and both parents), 3 individual therapists, and a number of residential workers, more complicated relationships and countertransference problems are expected than in standard psychotherapy.

Residential work tends to reawaken any unresolved emotional problems of the staff. The need to handle situations immediately at all hours, sometimes with too few adequate workers, contributes to both physical and emotional fatigue causing difficulty for even relatively mature workers in meeting the constant demands of a heterogeneous group of emotionally disturbed children. Conflicts centered around dependency, with rivalry and hostility to children or with overidentification with them, may interfere with the achievement of constructive techniques for their daily handling. Individual and group inconsistencies are apt to occur especially in regard to the balance of permissiveness and limit-setting. Failures in the firm setting of limits to destructive behavior occur with the inability to differentiate firmness from hostility and with the overidentification with children by workers who unconsciously condone such behavior because of their own defective controls. The setting of limits is then associated with anxiety and guilt rather than with a kindly, helpful attitude for giving opportunities and patterns for growth.

The response of children to staff inconsistencies was observed in the development of a mutiny in the ninth month of the present program. In August, staff members were aware of increased tensions in

themselves and in the children who were difficult to manage because of impulsive, acting-out behavior. Included in some of the destructive activities were several incidents of fire setting and the demolition of a large doll house representing the Home. Workers were excessively fatigued because of vacations and the unavailability of adequately qualified personnel. The vacation of the chief worker, with whom many children had the closest relationship, contributed also to the general insecurity of other workers. There was a breakdown in the delineation of roles, with other staff substituting in the residential area. The children were keyed up in anticipation of the opening of school and several had just returned from home visits.

The day school opened the chief worker, who had just returned, announced in club meeting that along with the new school routine it was important to review certain House rules. Whereupon, Tom declared that the children were tired of taking all this stuff from the adults and were now going to take over. And they attempted to do so; for the next few hours bedlam reigned with children attacking staff, throwing food and destroying property. Each staff member, including the parents' social workers and psychiatrists, took one child to firmly protect him from further destructive behavior. All children except Tom responded very readily and seemed relaxed and grateful for this protection. But Tom, who was most untractable and unmanageable, showed defects in reality testing so that hospitalization on a psychiatric ward was indicated.

The next day 4 children refused to go to school and started to run away. To their surprise 5 staff men (including one former track man) safely brought them back and escorted them to school. Within a few yards of the Home all were walking along willingly. The school principal, who had been alerted about the problem, warmly greeted the children who accepted his firm announcement that they would remain in school and abide by the rules. At lunchtime the children were equally surprised to find any potentially dangerous equipment removed. But they seemed relieved and one commented: "We sure had you scared, didn't we? We didn't think you knew how to make us behave, but we'll try again." That night at dinner there was again increased tension, throwing of food and threats to run away. Soon a policeman arrived to talk with them. He very firmly and kindly said that as an officer of the law he was interested in helping and protecting people and that he personally would help take care of them to prevent their getting into difficulties. He further indicated that if any felt unable to control themselves he would help the staff find a safe place for them for the night. Again the children were surprised to learn that the staff had community help for them. With definite evidence of relief of tension rather than with fear they responded readily to the setting of further limits on attempted destructive behavior, and within a few days all equipment was returned as they seemed capable of using it constructively.

This mutiny occurred because of the children's need to find consistent security with adults. In retrospect, the inconsistencies in daily handling by the staff were obvious. Often there had been overly permissive attitudes in allowing children to go through private desk drawers, to destroy furniture and the doll house representing the Home, and to go beyond other realistic limits in the living experience. There had been rivalries among staff for the children's response and for positions of authority as well as too few adequate workers. The children were asking the adults to provide a stable framework for their security.

Following this the staff⁶ worked actively together in redefining their particular positions and in introducing better organization into the program. A definite but flexible hierarchy of professional and administrative responsibilities was delineated to prevent the setting up of triangular relationships between staff members. In regular workshop conferences, in total case conferences, in administrative and multiple "corridor conferences," and especially in individual supervisory sessions, problems between staff are usually worked out fairly well. In working together the staff develops an inservice training program that is carried out continuously around the current problems of the children. The time, effort, and energy spent in working with staff is at least equivalent to that spent with children. Occasionally severe personal problems preclude a staff member's continuing to work in this program, especially if he cannot be helped on an ego level through interstaff relationships. In residential treatment psychotherapy must be for the children and not for the staff.

In developing a residential program it becomes apparent that its effectiveness depends on the establishment of an adequate staff working together consistently and long

⁶ The author wishes to acknowledge the valuable assistance of Dr. Maurice Levine, professor of psychiatry, and of the entire staff, especially Dr. Louis Wise and Dr. I. H. Weiland, psychiatrists; Mrs. Dorothy Mueller, chief psychiatric caseworker; Miss Helen Hayward, psychiatric caseworker; Miss Bernice Crumpacker, chief residential worker; and Miss Beulah Winstel, former chief recreational worker.

enough to become a relatively well-stabilized and coordinated group. Although progress is made in this, the inevitable changes of personnel and in the group of patients indicate that the ever-present task for the staff is to learn to work together. Because of the many personalities involved, the initial difficulties are very great. If one can weather the early storms with the capacity for observing oneself as participating in them, there are then probably few better ways to more thoroughly integrate further self-understanding, which in turn makes for the more successful application of principles of psychotherapy in residential treatment.

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CLINICAL NOTES

PHARMACOLOGICAL STUDIES WITH ANTABUSE

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The effect of Antabuse³ on the glomerular filtration rates of 6 trained, nonanesthetized dogs was measured. Liver function tests were done on dogs before and after giving Antabuse to determine if any changes were produced by the drug. The effect of paraldehyde on animals who were receiving Antabuse was observed. A 5% solution of acetaldehyde was given intravenously to dogs to determine its effect on the electrocardiogram. The regularity of the estrous cycle in rats was observed for possible alteration as a result of taking the drug.

METHOD

The glomerular filtration rates of 6 trained, nonanesthetized female dogs were determined by the standard creatinine method. After the normal glomerular filtration rates were established the dogs were each given 1 g of Antabuse daily, by mouth, for a period of one month, and the glomerular filtration rates were again determined. Creatinine was used rather than insulin since the chemical determination of creatinine is simpler, and in dogs, but not in human subjects, gives a truer measure of glomerular filtration.

Liver function was determined by the cephalin cholesterol flocculation test done on 5 dogs before they were placed on Antabuse. The test was repeated on those same dogs after 60 days during which each had received 1 g of Antabuse daily by mouth. Paraldehyde (5 cc) in normal saline was given intravenously to dogs that were each receiving 1 g of Antabuse daily. These dogs were

observed along with control animals given paraldehyde in the same dosage.

Electrocardiograms were taken on 3 dogs receiving a 5% solution of acetaldehyde in normal saline intravenously. This procedure was carried out because the Antabuse-alcohol reaction has been attributed to an increased blood level of acetaldehyde.

Vaginal smears were taken daily on litter mates of the Sprague-Dawley strain of rats for a period of 2 weeks, and 7 rats showing regular estrous cycles during this period were selected as test animals. These 7 test animals were given 4 mg each of Antabuse by mouth daily for a period of 2 weeks. Daily vaginal smear studies were continued.

RESULTS

The glomerular filtration rate was found to be reduced by 33½% in the dogs receiving 1 g of Antabuse each, by mouth daily for a period of one month.

No change in liver function due to the taking of Antabuse was demonstrated. Those dogs showing abnormalities prior to receiving the drug did not show an increase in these abnormalities after receiving 1 g of Antabuse daily for 60 days.

Giving of paraldehyde to dogs who were receiving Antabuse did not produce any responses not seen in the controls. The electrocardiograms in dogs given an infusion of a 5% solution of acetaldehyde in normal saline intravenously showed a depression of the R waves in all leads. The 7 rats with regular estrous cycles showed no change in this regularity when they were given 4 mg each of Antabuse daily by mouth for a period of 2 weeks.

DISCUSSION

Since, in this study, the only demonstrable change in organ function was in the glomerular filtration rate, it would seem wise to

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³ The material for this study was furnished by Eli Lilly and Company.

check repeatedly the kidney functions in patients receiving Antabuse over a prolonged period. The present concern over the effects of Antabuse on liver function was not substantiated by these animal studies. The giving of paraldehyde to alcoholics who had been receiving Antabuse would appear to offer no extra hazard.

The effects of acetaldehyde given intravenously on the electrocardiogram of dogs were not similar to the reported effects on the electrocardiogram in human patients during the Antabuse-alcohol reaction.

CONCLUSIONS

1. In dogs, Antabuse decreases glomerular filtration.
2. Dogs tolerate Antabuse without evidence of liver damage.
3. Giving of Antabuse to dogs did not alter their response to paraldehyde.
4. An intravenous infusion of acetaldehyde in dogs causes a depression of the R wave in all leads in the electrocardiogram.
5. The regularity of the estrous cycle in rats is not affected by Antabuse.

HYALURONIDASE AS AN ADJUNCT IN INSULIN COMA THERAPY

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Refractoriness to insulin, manifest by high dose requirements, long induction period, or comas of inadequate depth, is a common problem in insulin coma therapy. In a paper to be published one of us (AES) will present evidence that "refractory patients" have a relatively poor prognosis. The prolonged time required for each coma and to complete a series of adequate comas in such patients is of economic import. Since hyaluronidase³ increases the rate of absorption of parenteral fluids, it was decided to conduct clinical trials in the hope that hyaluronidase might decrease refractoriness to insulin.

METHOD

During the month of April, 1951, all schizophrenic patients under treatment with insulin coma therapy were used as subjects. Since marked variations in refractoriness to insulin exist, and since in any patient refractoriness is influenced by such factors as day of the week, manipulation of dose, mental state, etc., it was decided to administer hy-

aluronidase on alternate days for 6 weeks and use the in-between days as controls. Measured were the following: (1) depth of coma; (2) time of injection to time of onset of subcoma reaction, and (3) time of injection to time of onset of coma. Each test day was then compared to the previous and following days, when hyaluronidase was not used, excluding instances in which the insulin dose had been changed during the 3-day period. There remained 128 "test" days and 228 "control" days in 14 subjects (6 men and 8 women).

No deviation in routine was instituted except that 25 to 75 units of Wyadase was added to the insulin on "test" days. Patients had no knowledge of the experiments. Regular crystalline insulin with administered intramuscularly into the gluteus, using alternate glutei daily.

RESULTS

Table 1 shows that there was a reduction in the time for onset of subcoma and coma on test days. Table 2 shows that there were individual differences, which were sometimes spectacular. There was a significant increase in depth of coma on days on which hyaluronidase was used. In 47% of individuals there was a significant increase in the depth of coma. In 5 subjects third stage comas occurred *only* on test days.

Hyaluronidase was subsequently employed

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³ Wyadase (Wyeth) was used in this study. We wish to acknowledge the cooperation of Wyeth Incorporated, Philadelphia, Pa., for contributing the Wyadase, and the assistance of Mrs. Doris Martin, R.N., and Mrs. Mary McShea, R.N.

TABLE 1

SUMMARY OF FINDINGS COMPARING TREATMENT DAYS ON WHICH HYALURONIDASE WAS USED WITH CONTROL DAYS.

	With hyaluronidase	Without hyaluronidase	Significance
Number of days in experiment.....	128	228	.....
Mean time in minutes from injection to onset of subcoma.....	64.6 \pm 13	77 \pm 25	$p = .001$
Mean time in minutes from injection to onset of coma.....	119 \pm 40	128 \pm 36	$p = .03$
Percent of treatment days on which occurred:			
(1) Coma reactions.....	83.5%	67.9%	$\chi^2 = .9$ (N. S.)
(2) Third stage comas.....	36.7%	20.6%	$\chi^2 = 4.9$ ($p = .03$)
(3) No coma reaction.....	16.4%	32.0%	$\chi^2 = 4.9$ ($p = .03$)

TABLE 2

SUMMARY OF REDUCTION IN TIME INTERVALS IN MINUTES WITH HYALURONIDASE AS COMPARED WITH THAT OF CONTROL DAYS BY PERCENT OF INDIVIDUALS.*

	0-15	16-30	31-50	50 +
From injection to onset of first stage coma	36%	14%	36%	14%
From injection to onset of second stage coma	14%	65%	21%	0%

* Based only on those subjects, 16, in which there were 6 or more "test" days and 12 or more "control" days.

in an attempt to induce the first coma and to reduce insulin dose requirements. In 5 sub-

jects the first coma resulted when hyaluronidase was administered with 150 units of insulin, although on subsequent days without hyaluronidase progressively larger doses failed to result in coma. In 7 patients whose insulin dose requirements had been fairly constant for 3 weeks, and sufficient to produce coma, reduction in dose was attempted by the use of hyaluronidase. In 3 subjects it was possible to reduce the insulin dose by 400%, still maintaining an adequate depth of coma. Since these phenomena can occur without hyaluronidase, statistical assessment of these results is not reliable.

No untoward reactions of any kind were observed.

FEEDING OF PATIENTS AFTER TERMINATION OF INSULIN COMA TREATMENT

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Lyons, New Jersey

The solution of the problem of secondary shock, lack of appetite, nausea, and vomiting after termination of insulin coma treatment depends on food rich not only in carbohydrates, but also in proteins and fats, and in proper spacing and palatability of meals. After trial and error the following method practically solved the problem of appetite, nausea, and vomiting, greatly reduced the

incidents of early secondary reactions, and eliminated the late secondary reactions.

(a) Between 11 a.m. and 12 noon coma is terminated with 150-450 cc. of 25% glucose, I.V. Patients are allowed to stay in 4th stage³ for 1 to 1½ hours. (Insulin is given I.M. at 6 a.m. Doses up to U 2000 have been in use.)

(b) After arousal patients receive 14 to 15 oz. of 40% glucose followed by a special feeding consisting of the following:

¹ VA Hospital, Lyons, N. J.² Chief, Dietetic Service, VA Hospital, Lyons, N. J.³ Veterans Adm. Technical Bulletin, TB 10-50, April 16, 1948, pp. 2-3.

	Amount	CHO	Prot.	Fats	Calories
Meritene *	3½ oz.	20.3	8.7	9.3	144
Cream, light.....	3½ oz.	3.5	3.5	21.0	210
Vanilla ice cream, ½ cup.....	8 oz.	16.0	3.0	10.0	165
		39.8	15.2	40.3	519

* A whole-protein diet supplement fortified with vitamins and minerals, as manufactured by Dietene Co., Minneapolis, Minn.

(c) At 1:30 p.m. after shower, patients are served a high caloric meal consisting of the following:

arousal is chiefly responsible for lack of nausea and vomiting as well as reduction of incidence of early secondary reactions. The

	Amount	CHO	Prot.	Fats	Calories
½ cup, orange juice.....	100 gms.	11	.5	..	45
½ cup, cooked cereal.....	20 gms.	15	2.5	1	80
2 eggs.....	100 gms.	..	13.	12	160
2 slices, bacon.....	..	..	1.5	11	105
2 slices, enriched toast.....	60 gms.	30	5.	2	160
1 tblsp. jelly.....	..	14	..	..	55
2 squares, butter.....	10 gms.	..	..	8	70
1 oz. cream, light.....	30 gms.	1	.1	6	60
8 oz. milk.....	240 gms.	12	8.5	9	165
Instant postum *	..	1.7	.1	..	6
		89.7	31.2	49	906

* Manufactured by the Post Cereal Division, General Foods Corp., Battle Creek, Mich.

Instant postum is used instead of coffee because of its potassium content (2200 mg. K per 100 gms.).⁴

(d) At 5:00 p.m. regular dinner meal is served in dining room with other patients.

(e) At 8:00 p.m. the following is served:

better consumption of the afternoon meal and the meat sandwich in the evening are responsible for great reduction of late secondary reactions.

This method has been in use for the past 2 months on 15 patients.

	Weight	CHO	Prot.	Fats	Calories
Sandwich bun.....	105 gms.	52.5	8.8	3.5	80
Meat, lean.....	75 gms.	..	19.	18.	240
Butter.....	5 gms.	..	..	4.	35
Lettuce, 1 leaf.....	..	..	..	..	..
Fruit, 1 serving of.....	100 gms.	13.	.5	..	55
Milk, 8 oz.....	240 gms.	12.	8.5	9.	165
		77.5	36.8	34.5	575

The use of ice cream with meritene combined instead of additional glucose after

⁴ Mead Johnson & Co. *Sodium & Potassium Analyses of Food and Waters*. Fifth test, Oct., 1947, with additions & corrections. Mead Johnson & Co., Evansville, Ind.

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CORRESPONDENCE

"GOBBLEDYGOOK IN PSYCHIATRIC WRITING"

Editor, AMERICAN JOURNAL OF PSYCHIATRY:

SIR: The editorial with this title in your issue of December, 1951, page 474, gives me great joy. For many years I have urged simplicity and clarity in medical writing. Far too many contributions to literature in the field of psychiatry conceal their meaning, even their thought, with ornate diction, complex grammar, and lack of lucidity. "New words cannot be avoided" but new words should not be coined unless existing words are inadequate.

Like the writer of your editorial, I have collected a few examples of gobbledygook from recently published books and articles. Incidentally, "gobbledygook is an American colloquialism defined as speech or exposition that is obscured by excessive use of technical terminology, involved sentences, and big words."

... during its earliest years the child thinks primarily in terms of visual images. The parents and their substitutes come to form composite images in the mind of the child, and these images or "imagos" persist for a lifetime.

Who needs that word "imagos"?

The impulse neurosis adds nothing new to our study of psychodynamics. It combines the ego-syntonic character of psychopathy with the ritualistic, circumscribed symptomatology of compulsive obsessive state.

Isn't that clear?

There is little heuristic value in erecting a specific hierarchy of the neuroses and psychoses as correlated to a multiple stage account of the development and vicissitudes of the libido. Instead it can be contended on both theoretic and clinical grounds (a) that the so-called libidinal stages of development have a temporal existence only in so

far as the growing infant becomes physiologically capable of expressing them, and (b) that in later life the "psychological" counterparts of these libidinal organ-cathexes overlap and mingle in a way that makes analysis of complex psychotic reactions in terms of simple "orality," "anality" or "genitality" analogous to committing mayhem on the facts.

As they say in the international congresses, please translate.

One glossary of psychiatric terms yields such weird words as:

peniaphobia—a morbid dread of poverty
homilophobia—a fear of sermons
osphresiophilia—a morbid fascination with odors
necromimesis—acting as though dead

For some time I have argued with publishers that a book that requires a glossary should be declined on the ground that it needs to be thoroughly edited if not rewritten.

I looked through the entire issue of your JOURNAL and was unable to find any quotable instance to prove the point that I am here belaboring. This speaks well for your editorial standard. I doubt that a survey of most other periodicals in your field would result with a similar lack of success. Big words, complex sentences, and extraordinary diction seem to have become the ordinary language of psychiatry. As long as this state persists medical and public suspicion of the motivations of psychiatrists will continue to prevail.

MORRIS FISHBEIN, M. D.,
Chicago, Ill.

COMMENT

DEMOCRACY AND LIBERTY IN THE ATOMIC AGE

At the 1951 National Conference of Social Work I made an address on the subject of research. My central theme was that, while research in the natural sciences has made such amazing advances that it is ushering us into a new scientific world, research in the social sciences is lagging far behind our minimum needs. The scientific progress of the past hundred years has been astonishing, but it may even be dwarfed by far more amazing discoveries in the near future.

In the social sciences, however, progress has been limited. By the social sciences, of course, I mean all those sciences dealing with the personal relations of people—sociology, anthropology, political science, economics, social work, psychology, psychiatry, etc. In some of these fields more progress has been made than in others, but in comparison with the progress in the natural sciences, we are in a sorry state of affairs.

So, we are far on the way toward achieving mastery of the natural world in which we live, but this may be an empty triumph unless we succeed in achieving mastery of ourselves. Can we not restore the balance by moving forward to new achievements in the social field?

It was in this connection that I referred briefly to the problem of the natural scientists themselves as human beings. While they always pursue their scientific study with cold objectivity and scientific methods, they are by no means indifferent to the social consequences of their discoveries. Various groups of natural scientists have shown increasing concern about social problems, particularly those that grow out of their own scientific activities. However, a peculiarly difficult problem for our social order has arisen from the activities of a tiny few of the natural scientists who have turned traitor. Some of the leading atomic scientists in the West have deserted to the totalitarian enemy; others have peddled atomic secrets; still others have indicated their preference for communist despotism over the

democratic system. This is a matter of desperate seriousness to us. The present world crisis may possibly be due, in part, to the disclosures these men have made, and some day our very survival may be threatened by this kind of disloyalty.

In this crisis our society has tried to protect itself—by security checks, by loyalty oaths, by establishing new layers of secrecy. This is the well-known method of preserving secrets; it is hallowed by the tradition of centuries. Governments, industrial concerns, and individuals all have secrets that they try to keep from outsiders; is it not a matter of historical record that a family of French doctors succeeded in preserving for over a century the secret of the forceps, which one of them had invented for obstetrical deliveries? So today we have tightened up our safeguards. Are we achieving success? Is this the right method?

There is no simple answer to this question. Obviously, it is desirable to preserve as much secrecy as we can concerning military weapons. No doubt the clearing and checking of individuals has brought about some increased security. The question is whether we have not reached the point of diminishing returns from these techniques. Furthermore, are these methods causing us losses that more than wipe out the gains? And, lastly, are there any improved techniques that might be developed?

Let us examine these points more fully. One of the favorite techniques for screening individuals for security purposes is to explore a person's thinking. The opinions of individuals, not only as of today, but for years in the past, are being minutely examined for traces of infidelity to our social system. This procedure has an element of sense in it—the man of today is a product of the past. So it would seem that in some cases a more careful exploration along this line would have detected potential traitors. However, it is illusory to count upon this device for safety.

In the first place, it is a fallacy to think that we have gauged the mind of an individual today by exploring what he thought 15 years ago. Nor can we be sure that what he thinks today will be what he believes tomorrow. People change their minds, and there is no device on earth that can discover in advance how they are going to change them. The patriot of today may be the traitor of tomorrow.

We can see this clearly by looking at the opposite side of the coin. Some of our most rabid anti-communists today were loyal members of the Party not so long ago. The Soviets, even with their iron curtain and their savage police methods, have not been successful in keeping the loyalty of their followers nor in preventing the spread of ideas. If they cannot succeed in preventing desertions from their cause, how can we from ours—that is, by this method of loyalty testing?

In the second place, there are losses in this technique that may far outweigh the gains. We have already had evidence of leading scientists refusing to participate in the atomic program because of these techniques. There are other examples of people refusing to express themselves for fear of the consequences. There is the likelihood that the finest and most imaginative minds will not participate in this type of research.

There is also another danger. Restricting knowledge from the enemy means also restricting it among ourselves. Every such restriction limits to some extent the capacity of the democratic believer from using all of his powers in support of the democratic cause. In other words, we bind ourselves and limit our achievements. Restrictionism against the enemy is useful insofar as its advantages exceed its disadvantages; when the harm to ourselves exceeds the gain, it has become a useless tool.

There is another positive factor that must be taken into account. Democracy and liberty have been the sure foundations of our success. History proves it. Once before in the history of Western Civilization the temporary triumph of these ideas and principles led to a flowering of knowledge and culture that had never been seen before, and has never been repeated until our own time.

Some 400 years before Christ that remarkable, tiny cluster of human beings who lived in Athens and in a number of other Greek city-states demonstrated what freedom could accomplish. The achievements of the Athenians in art, literature, politics, and natural science need no elaboration here. Despite its triumphs, their little experiment failed. It was snuffed out by the military power of the surrounding despotic empires. For more than a thousand years thereafter military power held sway. Scientific progress was halted. Some of the knowledge that the Greeks had gained was lost.

Nothing comparable to this developed until freedom and democracy flowered again after the revolutions of the late 1700's. Within the last 150 years the New Democracy has repeated on a world scale the successes of the ancient Greeks. It is in this atmosphere of democracy and liberty that our recent scientific progress has developed. Again it has been demonstrated that freedom is man's greatest tool. The achievements of the Twentieth Century are the product of free peoples, free labor, free enterprise, and democratic governments. We must not permit anything whatever to jeopardize the continued functioning of our democratic system.

Finally, perhaps research in some of the social sciences would be useful in helping solve this problem. The Greek city-states fell because they could not devise a cooperative mechanism. The Western world will fall unless it can establish enough social cohesion within each nation, and later among the free nations, to enable them to pursue the common goal of expanding this sphere of democratic freedom. Can anyone seriously question today that one of our most urgent needs is the efficient functioning of democratic government? Have we achieved reasonable success in this? Are there improvements that can and should be made to enable government to express better the common will of the people?

Perhaps psychiatry is one of the newer sciences that can make a great contribution. Some unbalanced minds today are safely protected for their good and ours in mental institutions. Yet there are many others who roam freely among us, wreaking their

aggressions against their fellow citizens. In prewar Germany certain mentally disturbed people of homicidal intent were undoubtedly committed to mental institutions on the basis of psychiatric knowledge of their tendencies. Yet the greatest killer of them all—Hitler—might not have been adjudged a mental case. Yet can anyone doubt that he caused infinitely more damage than all the psychotics in the world?

May we not hope that, as the frontiers of psychiatry are further extended, we may be able to receive some help in identifying unbalanced individuals who may constitute a

danger to the social order? Certainly we must somehow discover a way to maintain the strength of the democratic system, which is based upon the maximum degree of freedom, while at the same time providing ourselves with a reasonable minimum of protection against antisocial and traitorous individuals. In any event, where the decision is a close one, the choice should generally fall on the side of freedom and against the extension of secrecy.

EWAN CLAGUE,
Commissioner of Labor Statistics,
U. S. Department of Labor

THE HEALING OF POETRY

John Stuart Mill experienced a period of depression as a young man. In his extremity he turned to the reading of Wordsworth's poems, although "with no expectation of mental relief from it." The effect of this exercise, however, was remarkably salutary, as he reports in his *Autobiography*.

"What made Wordsworth's poems a medicine for my state of mind was that they expressed, not mere outward beauty, but states of feeling, and of thought coloured by feeling, under the excitement of beauty. They seemed to be *the very culture of the feelings*, which I was in quest of. . . . From them

I seemed to learn what would be the perennial source of happiness, when all the greater evils of life shall have been removed. And I felt myself at once better and happier as I came under their influence; . . . poetry of deeper and loftier feeling could not have done for me at that time what his did. I needed to be made to feel that there was real permanent happiness in tranquil contemplation. Wordsworth taught me this, not only without turning away from, but with a greatly increased interest in the common feelings and common destiny of human beings."

NOTICE

Due to confusion concerning voting instructions please use punch card for voting on amendments and sign. The voting ballot for officers and council just mark and do not sign, and enclose both in Board of Tellers envelope.

AUSTIN M. DAVIES.

NEWS AND NOTES

INTERNATIONAL JOURNAL OF GROUP PSYCHOTHERAPY.—During 1951 the four issues constituting Volume I of this new quarterly journal made their appearance. The Journal is the official publication of the American Group Psychotherapy Association (formerly the American Group Therapy Association). It is published by International Universities Press, Inc., New York, and the annual subscription rate is \$7.50.

In the initial editorial, Dr. Lewis H. Loeser, president of the American Group Psychotherapy Association, said:

Our orientation will be primarily clinical and will reflect, in an unbiased manner, the various types of group therapy currently employed. We shall devote our interests toward accurate reporting and interpretation of group therapy as it is practiced in this country and abroad. Every effort will be made to stimulate the study and validation of current practices. The Journal will not reflect the opinion of any one school or person but will serve as a forum for free discussion and exchange of ideas and experiences.

The editorial committee consists of Samuel B. Hadden, M.D., chairman, and eight associates, with S. R. Slavson as consulting editor and Lottie M. Maury as assistant editor. The editorial offices are at 228 E. 19th St., New York 3.

UNIVERSITY OF COLORADO POSTGRADUATE COURSE 1952.—These graduate courses for general practitioners will be held at the School of Medicine, University of Colorado, from March to June 1952. They will include 3 lectures on psychiatry, June 26, 27, and 28. Guest lecturer will be Dr. William T. Shanahan, professor of psychiatry, University of Texas, Galveston.

For further details and registration write to Postgraduate Education, University of Colorado School of Medicine, 4200 East Ninth Ave., Denver, Colo.

WORKSHOPS IN RORSCHACH METHOD.—The Western Reserve University annual workshops in the Rorschach method will take place June 2 to 6, 9 to 13, and 16 to 20. These dates are for the three courses,

introductory, intermediate, and advanced, respectively. Dr. Marguerite R. Hertz, associate clinical professor of psychology, is instructor.

The fee per workshop is \$40.00 and registration is limited to 25 persons. Inquiries should be made prior to May 15 to Dr. Hertz in the Department of Psychology, Western Reserve University, Cleveland 6, Ohio.

NATIONAL TRAINING LABORATORY IN GROUP DEVELOPMENT.—This organization will hold a 4-week summer laboratory session at Gould Academy, Bethel, Maine, from June 22 through July 18. Approximately 100 applicants will be accepted. Persons involved in problems of working with groups in a training, consultant, or leadership capacity in any field are invited to apply. The purpose of the training program is to sensitize leaders in all fields to the existence and nature of the dynamic forces operating in the small group.

The National Training Laboratory in Group Development is sponsored by the Division of Adult Education Service of the NEA and the Research Center for Group Dynamics of the University of Michigan, with the cooperation of the universities of Chicago, Illinois, California, Ohio State, Antioch College, Teachers College, Columbia, and other educational institutions. Its year-round research and consultation program is supported by a grant from the Carnegie Corporation. For further information, write to the NTLGD at 1201 Sixteenth St., N.W., Washington 6, D.C.

VA SEMINARS, CHICAGO AND DOWNEY, ILL.—Thirteen seminars in "Modern Concepts in Psychiatry" are being offered this winter and spring at the VA Hospital, Downey, Ill., and the Mental Hygiene Clinic, Chicago. This third annual series of lectures is presented by prominent psychiatrists in addition to Dr. Melville J. Herskovits, professor of anthropology, Northwestern University and Dr. Norman

Haire of London, England, editor of the *Journal of Sex Education*. Dr. Herskovits spoke at the initial seminar on January 16 and Dr. Haire on February 20. The series will end on May 28. All members of the medical and allied professions are invited to attend the series.

RORSCHACH WORKSHOPS, UNIVERSITY OF CHICAGO.—The Department of Psychology announces two workshop seminars in the Rorschach test, July 7 to 11 and 14 to 18. Dr. S. J. Beck will conduct both seminars. The first week's sessions will demonstrate basic processes, and the topic for the second week will be acute stresses, in adults and in the adolescent range. For information, write to the Department of Psychology, University of Chicago, Chicago 37, Ill.

NEW DIRECTOR, HOMEWOOD SANITARIUM.—The President of the Homewood Sanitarium, Guelph, Ontario, Canada, announces the retirement of Dr. F. H. C. Baugh as medical superintendent on account of ill health. Dr. A. L. MacKinnon, formerly assistant medical superintendent, has been appointed to succeed Dr. Baugh, and Dr. G. S. Burton, of the Homewood Sanitarium staff, has been appointed assistant medical superintendent. Dr. MacKinnon's long and efficient service both clinical and executive makes his appointment as head of the institution especially appropriate.

RETIREMENT OF DR. MAX A. BAHR.—A Farewell Testimonial was given on January 10, 1952, for Dr. Bahr, who retired March 1, 1952, as superintendent of Central State Hospital of Indianapolis, Ind. Dr. Bahr joined the staff in 1898 and since 1923 has been superintendent.

For many years he was also chairman of the department of psychiatry and neurology, Indiana University School of Medicine.

The Hon. Henry F. Schricker, Governor of Indiana, paid a personal tribute to the distinguished 77-year-old psychiatrist. Dr. Walter Bruetsch reviewed Dr. Bahr's scientific career, emphasizing his pioneer efforts in introducing and popularizing malaria therapy of general paresis in this country. Dr. Bahr spoke on "My Fifty Years of Psychiatry."

INTERNATIONAL GROUP FOR THE COORDINATION OF PSYCHIATRY AND PSYCHOLOGICAL METHODS.—Dr. Jose Germain Cebrian, editor of the *Revista de Psicologia General y Aplicada*, and professor in the Instituto Nacional de Psicotecnica, Madrid, reports that the executive committee of the C.C.I.-C.M.S. of Unesco has decided to incorporate in its organization the International Group for the Coordination of Psychiatry and Psychological Methods, and has allotted to it the sum of \$400 for the publication of the Proceedings of the scientific meeting that took place in Stockholm at the time of the Eleventh International Congress of Psychology.

NATIONAL MENTAL HEALTH PROGRAM.—The National Institute of Mental Health reports the allotment of Federal funds for 1952 for training and research in psychiatry, neurology, psychiatric nursing, clinical psychology, and psychiatric social work amounting to \$3,100,000. This figure compares with \$3,200,000 in 1951 and \$3,550,000 in 1950. These grants are made in all the 48 states, the District of Columbia, Alaska, Hawaii, Puerto Rico, and the Virgin Islands.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY, INC.—The American Board of Psychiatry and Neurology will hold its first examination this year on June 13 and 14, 1952, in Chicago, Ill. The deadline for receipt of applications for this examination is March 15, 1952. There will be an examination also on December 15 and 16, 1952, in New York City. Deadline for receipt of applications for this examination is September 15, 1952. The number of candidates for each examination must be limited. Early application is advised.

AMERICAN PSYCHOSOMATIC SOCIETY.—The ninth annual meeting of this Society will be held at the Drake Hotel, Chicago, Ill, March 29 and 30, 1952. There will be four scientific sessions, with at least two of these devoted to panel discussions. The traditional cocktail party will be held on Saturday at the close of the afternoon session.

Registration fee for nonmembers of the Society will be \$5.00; students, interns, resi-

dents, fellows, and those in full-time academic positions will pay \$1.00.

The program of the meeting is available from the Society office, 551 Madison Ave., New York 22, N. Y. For further information write to the same place.

MASSACHUSETTS PSYCHIATRIC SOCIETY.—At the annual meeting held on October 16, 1951, Dr. Erich Lindemann spoke on the subject, "Some Developments in the Field of Preventive Psychiatry." He discussed the field station established for the development of a program of preventive psychiatry in Wellesley, Mass.

The following new officers were elected for the coming year: president, Dr. David Rothschild; vice-president, Dr. G. Colket Caner; secretary and treasurer, Dr. Jay L. Hoffman; councilors, Dr. John T. Shea and Dr. William Malamud.

WASHINGTON PSYCHIATRIC SOCIETY.—The annual meeting of the Washington Psychiatric Society, which has a membership of 270, was held on January 10, 1952. Officers for the coming year are as follows: president, Dr. Zigmond M. Lebensohn; president-elect, Dr. Henry P. Laughlin; secretary, Dr. Seymour J. Rosenberg; treasurer, Dr. Marshall Ruffin; council members, Dr. Douglas Noble and Dr. Robert A. Cohen.

Dr. Leo Bartemeier, President of the American Psychiatric Association, addressed the meeting on "The Attitude of the Patient." He also presented certificates of commendation to the three past presidents of the Society, Drs. Addison Duval, Robert Morse, and Norman Brill.

MEDICINE IN WEST GERMANY.—From the report of a survey of medical practice in West Germany *Médecine et Hygiène* (Geneva, 15 December 1951) gives the following data:

West Germany has presently 63,000 doctors (total for all Germany before World War II, 44,000).

Present number of medical students 20,000 (in ratio to population twice as many students as in the U. S.).

Estimated number of doctors 1953: 70,000.

The excess of physicians is attributed mainly to the influx of refugees and to recent war needs.

Eighty-two percent of the population of West Germany are insured under state medicine; 13% insured by private medical bureaus; 5% have no insurance.

There is much more sickness in West Germany than before the war and the people fall sick much oftener. In consequence doctors are working twice as hard as before the war for practically the same pay, averaging for all doctors 277 Swiss francs per month, which is less than the pay of a postman. At the same time the doctor's expenses, cost for equipment, etc., have increased from 200% to 230% beyond prewar levels. His hours on duty begin at 9 a.m. and generally extend to 11 p.m., and he must be on call for night work twice a week.

Médecine et Hygiène states that it is reporting the desperate situation of German doctors as a warning to Swiss visionaries who hanker after state medicine.

THE AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY, INC.

The following were certified at New York City, December 17 and 18, 1951.

PSYCHIATRY

Adkins, Charles F., 675 Fifth St., Beaumont, Tex.
Adland, Marvin L., 312 Essex Ave., Chevy Chase 15, Md.
Arnett, Vitold, Bellevue Hosp., New York 16, N. Y.
Ayd, Frank Joseph, Jr., 2600 Ailsa Ave., Baltimore 14, Md.
Bailey, A. Margaret, 6148 Second Ave., So., Minneapolis, Minn.
Bauer, Irving Lawrence, 60 Park Ave., New York 16, N. Y.
Bayles, Spencer, Student Health Service, Univ. of Colorado, Boulder, Colo.
Behan, Robert Carroll, VA Regional Office, 310 E. Jefferson Ave., Detroit, Mich.
Berliner, Harry M., VA Hosp., Lyons, N. J.

Blair, James Robert, Jr., 1708 Nix Professional Bldg., San Antonio, Tex.
Brown, Charles Thomas, Major, MC, Brooke Army Medical Center, Fort Sam Houston, Tex.
Bryan, L. Laramour, 1213 Court St., Utica, N. Y.
Buckner, Kathryn, 2109 Locust St., Philadelphia 3, Pa.
Caffey, Eugene Mead, Jr., VA Hosp., Roanoke 17, Va.
Carter, George Herbert, 80 E. Concord St., Boston, Mass.
Cates, John Robinson, Jr., 103 E. 86th St., New York 28, N. Y.
Christainsen, Philip Lucian, 440 Weston Rd., Wellesley 81, Mass.
Colgan, Harry J., Winnebago, Wisc.
Cook, Richard S., 737 N. Michigan Ave., Chicago 11, Ill.
Corman, Harvey H., 51 E. 73rd St., New York 21, N. Y.
Culleton, James F., Columbia Univ., Medical Office, New York 27, N. Y.
Cummings, Willard E., RFD 4, Gardiner, Maine.

- Draper, Harry R., 111 N. 49th St., Philadelphia 39, Pa.
 Dunbar, Alvin Lee, 632 Doctors Bldg., Cincinnati 2, Ohio.
 Dundon, Arthur F., Sr., Menninger Found., Topeka, Kans.
 Dyke, James Farrell, 55 E. 86th St., New York 28, N. Y.
 Dykens, James Warren, 80 E. Concord St., Boston 18, Mass.
 Eddy, Harrison Prescott, 5 E. 94th St., New York 28, N. Y.
 Elmore, John Durr, 3015 Seventh Ave., So., Birmingham, Ala.
 Faucett, Robert L., Prince Georges County Mental Health Clinic, Univ. of Maryland Campus, College Park, Md.
 Feldman, Harry, 340 Riverside Dr., New York 25, N. Y.
 Frank, William C., 105 Pleasant St., Concord, N. H.
 Freedman, David A., 1439 Tulane Ave., New Orleans, La.
 Freedman, Lawrence Z., 333 Cedar St., New Haven 11, Conn.
 Funk, Ian C., 4 Travis Rd., Natick, Mass.
 Galvin, James A. V., 912 S. Wood St., Chicago, Ill.
 Geassay, Louis Henry, VA Mental Hygiene Clinic, Main St., Hartford, Conn.
 Gill, Jonathan Belding, 3 Solon St., Wellesley, Mass.
 Goldensohn, Sidney S., 15 W. 84th St., New York 24, N. Y.
 Golub, Leon M., 10 E. 90th St., New York 28, N. Y.
 Gordon, Martin N., 5720 Wilshire Blvd., Los Angeles 36, Calif.
 Grider, James Allen, Jr., USPHS Hosp., Lexington, Ky.
 Haarer, John G., Ionia State Hosp., Ionia, Mich.
 Haber, Joseph, 1401 Elm Ave., Brooklyn 30, N. Y.
 Hack, Raymond L., Lt. Col., MC, 217 Arvin Drive, San Antonio 9, Tex.
 Hall, William A., 25 S. Broadway, Aurora, Ill.
 Hallenbeck, Durr Foster, Jr., McLean Hosp., Waverley, Mass.
 Hanes, Lishburn Clarence, Jr., Austin State Hosp., Austin, Tex.
 Hartman, Paul T., 5400 Arsenal St., St. Louis 9, Mo.
 Higgins, John W., Cincinnati General Hosp., Cincinnati 20, Ohio.
 Hoffman, Felix E., 120 Central Park S., New York 19, N. Y.
 Holiday, Andrew Thomas, Station H, Central Islip, N. Y.
 Hollander, Edward E., 120 Central Park S., New York, N. Y.
 Holtzman, Alan McKim, VA Hosp., North Little Rock, Ark.
 Hornowski, Marcel Jerome, 394 Merrimon Ave., Asheville, N. C.
 Hopkins, Albert S., 85-10 125th St., Richmond Hill 18, N. Y.
 Houston, Marietta, 450 Sutter St., San Francisco, Calif.
 Johnson, James C., Jr., 85 Jefferson St., Hartford 6, Conn.
 Jurka, Edith Mila, 221 E. 72nd St., New York 21, N. Y.
 Kaplowitz, Daniel, 985 Fifth Ave., New York 21, N. Y.
 Katz, Joel, 1200 Fifth Ave., New York 20, N. Y.
 Kaufman, Irving, 9 Wyman Rd., Cambridge 38, Mass.
 Kudrauskas, Edmund Nicodem, 270 Commonwealth Ave., Boston, Mass.
 Kurland, Albert A., Spring Grove State Hosp., Catonsville 28, Md.
 LaCerva, Salvatore Paul, VA, Bedford, Mass.
 Lacy, Burrill S., Jr., Topeka State Hosp., Topeka, Kans.
 Lasell, Eldridge L., Greenway Apt., 34th & Charles Sts., Baltimore, Md.
 Lawton, James Joseph, Jr., 681 Clarkson Ave., Brooklyn 3, N. Y.
 Lenzner, Abraham Samuel, 151-07 35th Ave., Flushing 54, N. Y.
 Lesser, Stanley R., 50 E. 72nd St., New York 21, N. Y.
 Lewis, Wiley Davidson, VA Hosp., Tuscaloosa, Ala.
 Lipin, Theodore, 11 E. 68th St., New York 21, N. Y.
 Lorenz, Maria, Massachusetts Gen. Hosp., Boston 14, Mass.
 Lowry, Elmer F., Jr., 7910 Lynbrook Dr., Bethesda, Md.
 Lynk, Stanley M., VA Hosp., Fort Custer, Mich.
 Markowitz, Irving, 967 E. 18th St., Brooklyn 30, N. Y.
 Mazer, Milton, 225 W. 86th St., New York 24, N. Y.
 McAtee, Ott B., Overbrook Hosp., Cedar Grove, N. J.
 McLaughlin, B. E., 108 E. Gowen Ave., Philadelphia 19, Pa.
 Meerloo, Joost A. M., 162 W. 54th St., New York 19, N. Y.
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* Denotes Supplementary Certification.

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BOOK REVIEWS

THE COLLECTED PAPERS OF ADOLF MEYER: VOLUME II—PSYCHIATRY. Edited by Eunice Winters. (Baltimore: Johns Hopkins Press, 1950.)

The second volume of Adolf Meyer's collected papers is devoted entirely to psychiatry, but in general it follows the pattern set by the previous volume on neurology. The papers are presented chronologically and one can follow the development of Meyer's career from Kankakee through Worcester, New York, and finally to the Henry Phipps Psychiatric Clinic in Baltimore. In addition, there are papers on his early medical formulations and special reviews of dementia praecox, paranoia, affective disorders, psychopathology, and psychodynamics. Perhaps the most important contributions are the remarks given at the opening of the Psychiatric Clinic in 1937.

As in the previous volume, Meyer's well-developed historical bent allowed him to record much material easily lost except for publication in volumes of this type. For instance, in the presidential address before the American Psychopathological Association in 1916 one finds a full review of the development of neurological and psychiatric journals as well as an account of the founding of special societies, with emphasis on the contrast between the free movement of neurology and the more rigid organized psychiatry.

In the introduction Dr. David K. Henderson remarks that Meyer's papers "are filled with sound advice and sagacity and constitute a contribution not merely to American, but to World Psychiatry which will be better assessed at a later date." He believes that the papers now assembled will repay the closest study, for Meyer's biologic viewpoint added an interest and hopefulness to psychiatry that will long endure. The reviewer believes with Henderson that it is impossible to assess Meyer's complete influence at the present time. The psychiatric world, however, is indebted to the editors of these volumes for collecting all the material that Meyer contributed to his special field.

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LA ANGUSTIA VITAL (PATOLOGÍA GENERAL PSICOMÁTICA). By J. J. Lopez Ibor. (Madrid: Editorial Paz Montalvo, 1950.)

Dr. Lopez Ibor is well known in the field of international psychiatry, both by his participation in international meetings and by his contributions to leading technical journals. In this book, the author has chosen one of the most crucial problems of psychiatry, and one of the most tempting themes of human life—*anxiety*. The study of anxiety, be-

cause of its extraordinary complexities, requires on the part of anyone who engages himself in it a solid knowledge of the different aspects of the problem, among them dynamic psychology, academic psychology, biology, anthropology; economic, social and racial concepts; philosophy, literature, and religion.

Such a knowledge, as the book discloses, is exhibited by the author, who reveals also a concise and clear literary style, not usually found in professional medical writers.

The planning of the book is rational and classical. The author starts with a general study of "*anxiety neurosis*," summarizing the various concepts in relation to the subject. From there he follows a line of clear exposition of the different aspects involved, from the basic structure of the personality to the philosophical, literary, and even religious facets of *anxiety*, according to his own personal theories. He emphasizes, with certain exaggerations, the clinical aspects of anxiety at the expense of the psychogenic factors.

Securely, and with ease, the author enters the field of clinical psychiatry and sets forth at length his personal concepts. He also analyzes the most outstanding contributions to the subject. The chapters dedicated to this study are, in the reviewer's opinion, the best in the book. They reveal the author's profound comprehension of the problem.

The works of Kierkegaard, Unamuno, Ortega, and Sartre receive particular attention from the author, who ascribes especial rank to existentialism in his metaphysical exposition of *anxiety*.

This volume is documented by a wide and comprehensive bibliography. It may be said, nevertheless, that the objectivity of this book is somewhat obscured by the author's attack upon psychoanalytical formulations. His obdurate resistance to such concepts is only a reiteration of the opinions first expressed by the authors in "Miracle" in 1936. Even with this stricture, the book deserves high praise.

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ELECTROENCEPHALOGRAPHY: A Symposium on its Various Aspects. By W. Grey Walter, et al. (London: MacDonald & Co, 1950.)

This text is extremely well written and clearly illustrated, the authors having covered the subject of electroencephalography in a most thorough manner. Chapter II, dealing with recording equipment and technique, would serve well as a fundamental model in the setting up of an electroencephalographic unit. The difficult question of interpretation is dealt with on a sound basis, there being a good description of the fundamental principles. Automatic analysis may be unduly stressed; however,

Dr. Grey Walter has played such a prominent role in developing this intricate equipment that he should be entitled to such indulgence. Incidentally the illustrations of the electroencephalographic tracings usually include frequency analyses. The chapters on physiology (Whitteridge), biochemistry (Heppenstein), and pharmacology (Greville) are sound and stimulating as the authors have introduced reports on experimental work in these fields, with an excellent bibliography so as to enhance the value of the text for reference purposes. It is comforting to see that the authors appreciate the need for such thorough discussion of the so-called normal rhythms in the electroencephalogram, and Dr. Grey Walter has set out in a clear and complete fashion the present knowledge on this subject. Again the introduction of the recent scientific investigation as to the significance of the various features of alpha rhythm makes this chapter most stimulating, and reference is made to McCullough's provocative discussion in this field. The difficult subject of epilepsy is treated most intelligently and the two major terminologies (Harvard and McGill) are given equal consideration. We would think this chapter would be of equal interest to the clinician and the electroencephalographer. The use of the electroencephalogram in assessment of intracranial tumour and cerebral trauma (Cobb) is given its appropriate place, the limitations of this laboratory procedure being well set out. The chapter on psychiatry (Hill) no doubt presented problems to the authors but they have handled it well. The reader is left with an appreciation of the tremendous scope for research in this field and the limitations, attributable not only to the electroencephalographic factors but also to psychiatry's somewhat confused terminology. We hope it will be a challenge to psychiatry to clarify and simplify at least the descriptive field of this subject.

This text is recommended to those interested in electroencephalography, neurology, and psychiatry. It will be of real value to those primarily interested in the scientific approach to the subject and those particularly concerned with its practical application. Undoubtedly it will serve as a reference text in its field for years to come.

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FREUD OR JUNG. By *Edward Glover*. (New York: W. W. Norton, 1950. Price: \$3.50.)

Edward Glover's book represents a very erudite, but at the same time violently biased, deprecatory critique of Jung's teachings as seen through the eyes of a thoroughly convinced Freudian. Some of his statements will, undoubtedly, be completely rejected by Jung as well as by other workers in this field, such as, for instance, the terse accusation that Jung does not know anything about child development. It is true that Jung's ideas about events that influence the character formation of the child are quite different from the Freudian concepts, or, to

be more specific, from those of the so-called orthodox Freudians. This is, in particular, true as far as the role of the early sexual trauma and its relation to the neuroses is concerned, much of which is clearly rejected by Jung in favor of different concepts.

Glover keeps insisting that there exists only an all-or-nothing "acceptance or rejection," respectively, of Freud's teachings. At our present state of knowledge it seems doubtful that such an attitude can be applied to any branch of science. Naturally, one also registers the many changes made by Freud himself during his lifetime while further developing his system. This lack of objectivity shines through several statements that seem to be taken for granted by Glover but probably not so by others. For instance, he writes that "in the history of human understanding there have been but two fateful occasions." The first arose when man developed the faculty of repression. "The other occurred towards the end of the nineteenth century when Freud, alone and unaided, crashed through the walls of the familiar to discover the unconscious mind." Here, many might like to add other fateful occasions.

All through the book Jung is being accused of being just a "conscious psychologist." Here, Jung finds himself in the company of Adler, Horney, Klein, Rank and others, all of whom are chided as "conscious psychologists." One comes to the conclusion, accordingly, that any worker in this field who does not subscribe entirely and for all times, past, present, and future, to Freud's principles, will be called a "conscious psychologist" by Glover.

To the reviewer, the chapter "Sociology, Politics and Alchemy" seems less biased and, consequently, most likely to become more widely accepted in its deductions and conclusions. In this chapter Glover elaborates, with a mixture of scientific thoroughness and biting sarcasm, on possible relations between Jung's "archetypes" and his sociologic and political concepts.

This book is certainly not an objective appraisal of Jung's theories. It might, however, be worthy of note that Jung, himself, in his discussion on Freud and Jung, expresses doubts that either he or Freud would be able to give an objective comparative appraisal of their own theories. The same seems to hold for some adherents of the various schools of thought. However, in spite of all the ridicule that Glover attempts to heap on the "eclectic," many will still feel that our knowledge of the sick and healthy mind, its psychodynamics and reactions, is as yet quite insufficient and that all efforts should be combined to increase our understanding. Consequently, one wishes that this erudite and sharp-witted author had used his thorough studies and knowledge of Jung's philosophy more objectively, therewith providing a guide through the maze of the various concepts of Jung's system.

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PSYCHIÂTRIE GÉNÉRALE. By Paul Guiraud. (Paris: Lefrançois Ed., 1950. Price: 2,000 Frs.)

This is an altogether new presentation of psychiatry and of its problems. When he wrote his book Guiraud deliberately ignored the traditional pattern of chapters used by the French authors. After a short historical introduction to the subject he stresses the more recent trends and ways of dealing with the neurotics and the psychotics. He recalls the importance of the directing principles that should guide one in studying the manifestations of disturbed emotion and thought.

The author makes a very definite choice while his criticism of the present-day theories and interpretations is always precise and objectively substantiated. His holistic views are fully described in his *practical biologism* and *double-aspect monism*. The last part of the book, and not the least, is a good presentation of the essential problems of psychiatry. He gives a great importance to good semiology and he advocates a complete revision of traditional symptomatology based upon a more exhaustive study of pathogenesis. He teaches the double entity of a living whole and local functions. He grants a large place to biological phenomena with due regard to the so-called wholly psychical symptoms. Guiraud's bibliography is up-to-date and quotes present-day German and English-speaking papers and books as well as the French.

To summarize, Guiraud is, above all, a biologist and a neurologist, which probably accounts substantially to make him a good psychiatrist. He gives more importance to the diencephalon and the brain-stem than to the infantile unconscious memories and to the analytically inspired theories. His book should be read by all those who have not yet made their choice; some analysts will frown at its perusal but they cannot escape admitting the entire *bonne foi* of its author.

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CULTURE IN CRISIS: A Study of the Hopi Indians.
By Laura Thompson. (New York: Harpers, 1950. Price \$4.00.)

This is an excellent study. It is concerned with the crisis through which the Hopi culture is at present passing. This crisis is described as having reached acute stages due to the fractionization of tribal lands, the destruction and depletion of tribal natural resources, the "outlawry of tribal ceremonies and their replacement by Christianity as the official religion, and compulsory attendance of Indian children at government boarding-schools, where they were subjected to intensive indoctrination and missionary proselytizing."

The investigation was carried out by an interdisciplinary group. The postulates upon which this group operated are clearly stated, a measure that, unfortunately, some other reports have lacked and hence have served to create confusion. For instance, Miss Thompson is at pains to state such basic

premises as the conception of culture in the following terms: "The human culture is conceived of as an historic, multidimensional structure of related human events which tends, in the course of time, to be integrated with the total environment by its human component."

There is a vivid description of the mechanisms by which the culture has sought to protect itself against early intrusions by the Spaniards and Navajos and, later, missionary pressures exerted particularly by the Baptists and Mennonites, and, until quite recent years, the pressure of federal policy aimed at Americanization of the Hopi culture. In the last few years, there apparently has been something of a shift in this policy, so that it is now possible to hope that the Hopi culture will be encouraged to develop in its own terms. The reactions to this pressure are described in terms of crystallization into rigid traditional form, open rebellion, and partial capitulation.

Within this general framework there is material of the greatest possible interest to the psychiatrist in the descriptions of the balancing social mechanisms found in the Hopi culture, in the lack of competition as an incentive, in the child training that results, in the adult, in complex, holistic thinking with a capacity in certain directions definitely exceeding that of comparable white subjects. The adult Hopi shows a remarkable capacity for abstract thinking and planning, and reveals also what Miss Thompson describes as "intensity with tranquility," this arising as a consequence of the kind of personality structure shaped by the Hopi culture.

This is a book to be strongly recommended.

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HUMAN PERSONALITY AND ITS MINOR DISORDERS.
By William Harrowes. (Baltimore: Williams and Wilkins Company, 1949. Price: \$3.50.)

The author's stated intention in this book is to show to students of personality the value of concrete objective data about normal persons and to describe the investigation of the individual in terms of "non-dogmatic common sense."

The book consists of a preliminary discussion of the structure of personality and instruction in the Meyerian system of collecting the data for "distributive analysis." Most of the book is a detailed commentary on the topics set for inquiry. The shorter final section describes the neuroses. A very brief chapter on treatment is included.

It is not quite clear to whom the author addresses himself. His tone is pedagogical, academic, literary, with emphasis on etymology and limited clinical material. The author focuses on the "total adaptation" of the individual and the multiplicity of etiologic factors in mental disorder. He labors the point that one must scrutinize the individual's experiences in every area before we can understand his adaptation or the economics of its failure.

Embedded in a mass of abstract material are many sage, valuable observations, particularly about the total personal and interpersonal meaning of trends often regarded in isolation. Anxiety is recognized as a distorted anticipation of total adaptive failure. Sexuality is seen as an expression of the individual's characteristic modes of relating. The function of a neurosis as a solution to a mis-conceived life problem is shown with clarity.

On the whole, however, the book is diffuse and lacks animation. One respects the solid generalities and assents to the descriptions, but misses the constructive matter of mechanisms, mental and physiological. The author rejects the notion of the unconscious in favor of the more meaningful perception that awareness is variable; but he then seems to exclude it from his clinical discussions. He describes psychotherapy more as deliberate rearrangement of life with a benign teacher than as a corrective extension and integration of awareness.

Neuroses are considered "partial" failures of adaptation. One may question the classification here. Many of the incapacitating mental illnesses included among these "minor" disorders we would, with the benefit of recent studies, probably relate to the major psychoses. And these entities are more clearcut than we usually see them. One can carp at many details that seem old-fashioned and superficial.

Valuable to beginners might be the wholesome concern with the complexity of the human organism, the tolerant economic approach to treating the patient in all effective ways, the inspiring influence of Adolf Meyer, as the author says.

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NEUROLOGY AND PSYCHIATRY IN GENERAL PRACTICE.

Edited by *Henry R. Viets, M.D.*, in collaboration with *C. Charles Burlingame, M.D.*, *Clarence B. Farrar, M.D.*, *Z. M. Lebensohn, M.D.* (New York: Grune and Stratton, 1950.)

In dedicating this little book to C. Charles Burlingame, the editors have succeeded in epitomizing the professional career of a psychiatrist who has had considerable influence on present-day psychiatric practice. Dr. Burlingame was identified with the eclectic, or so-called middle-of-the-road, psychiatry. He always insisted on setting concrete goals in therapy, which he strove to accomplish. He was constantly aware of the necessity of explaining to referring doctors, in understandable terms, the nature of the sickness, and the potentialities of their patients. From this background it was but a short step to develop the idea of a 3-day program devoted to neurology and psychiatry at the Clinical Session of the American Medical Association in 1949. Dr. Burlingame was chairman of this program, and 33 neurologists and psychiatrists took part in the discussion. In the preface the editor pays tribute to Dr. Burlingame's genius for organizing

the presentation of the material, which is summarized in this book.

In the foreword, Dr. Burlingame expresses the keynote of the book: "The problem, in planning for this section, was to produce a program in the field of neurology and psychiatry which could be shorn of its technical terminology, its extraneous discussions, and its conflicting points of view when they would serve only to contribute to the confusion and not to the enlightenment of men in other branches of medicine."

Dr. Viets' book has 7 chapters devoted to neurology and 9 to psychiatry. The section on neurology gives very practical advice as to the treatment of epilepsy in children and adults, and explains the nature and the use of the electroencephalogram. It revitalizes the approach to the treatment of the disabled neurologic patient. The chapter on neurosyphilis is very exhaustive, and thoroughly up to date. The chapter on migraine deals with one of the most prevalent symptoms encountered in the office of the general practitioner.

The section on psychiatry shows the role of the general practitioner as a front-line psychiatrist in meeting the emotional problems of the community. It indicates when the general practitioner should seek the help of a psychiatrist, and tries to clear up any confusion in the terms—psychiatry and psychoanalysis. It gives some pointers on choosing a doctor for a particular patient.

Separate chapters are devoted to psychosomatic medicine and psychotherapy. Generous space is devoted to understanding and treating the alcoholic patient.

The most vexing problem for the general practitioner is that of anxiety, and the special chapter on this subject seeks to give a broad understanding of its significance and management.

The last 2 chapters deal with electric shock treatment and psychosurgery, and serve to allocate these procedures to their proper place in the psychiatric armamentarium.

The group of editors who collaborated with Dr. Viets in the preparation of this book has achieved a signal advance in interpreting psychiatry and neurology to the general practitioner. It is hoped this effort will be continued, and that this book will be but the first in a series of this kind.

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MEDICAL PSYCHOLOGY. By *Ernst Kretschmer*. Tenth Improved and Enlarged Edition. (Stuttgart: Georg Thieme Verlag, 1950.)

For nearly three decades the author has been able to navigate the borderlands between endocrinology, neurology, psychiatry, psychology, and anatomy without arousing serious objections by any of the disciplines involved. This remarkable feat is achieved by a special technique of the author's, by which he very often rather hints at facts, observations, and interpretations than states them clearly. Thus, the book may serve as a starting point for

the reader's own thinking. The aim of the book is twofold: to take a psychiatrist beyond the border of his everyday work into the fields of psychology, anthropology, etc., and to familiarize the student of these subjects with neuropsychiatric thinking. For, as the author states, "The knowledge of neurosis is the knowledge of mankind."

The book consists of 5 parts. The first deals with the principal mental functions and their anatomic and physiologic basis; the second part concerns itself with the mental apparatus and its phylogenesis. Parts III, IV, and V deal with instincts and temperaments; personalities and reaction types; practical medical psychology, including examination, legal aspects, and psychotherapy.

Significantly, the greatest changes occur in the first part of the book. Kretschmer tries to incorporate as much of the newer research in neurophysiology and neuropathology as is compatible with his causative viewpoint of psychophysical connections. At times he opens himself to criticism through the way he chooses his examples to illustrate his point: e.g., in speaking of the importance of the thalamus as a relay station for pleasurable or painful sensations, he quotes a patient as follows: "I have the utmost desire to put my right hand on the soft skin of a woman. The right hand needs consolation. It seems that I am continuously longing for sympathy on my right side." In presenting such and similar observations as thalamus-pathology without critical psychodynamic evaluation the book subtracts much from its potential value as a "medical psychology."

The second part introduces the psychiatrist into the development of symbols in art and language, anthropology, experimental physiology, and psychology. This part is probably of greater interest to the clinical psychiatrist than the other chapters of the book.

A short chapter on instincts and their developments (less than 30 pages) reflects the author's attitude toward orthodox psychoanalytical concepts, which he partly accepts, partly rejects, sometimes enlarges, and sometimes improves. Thus, his concept of a "bundle of motivations" in which the ethically most valuable motivations are dominant in consciousness but the instinctual motivations are dynamically dominant, is a simple and useful description of many neurotic mechanisms and phenomena.

The last chapters—on psychotherapy—have undergone little change and are for several pages verbatim reprints of the author's statements in the first edition (1922). He probably gives away his true feelings about psychotherapeutic procedures when he speaks in this connection about the "orthopedics of the personality."

Kretschmer's book seems to this reviewer to be representative of present-day scientific work coming from Germany: It is based upon a definite concept of psychophysics interrelations and it accumulates from a number of different fields as many facts as are compatible with the author's theory, and then tries to integrate them into a new entity.

In this respect the book has achieved its aim and will continue to serve a useful purpose in the future. However, the choice of the material presented is severely restricted; the majority of the literature references are of the era of 25 to 40 years ago, newer literature quotations refer nearly exclusively to the author and his immediate co-workers. Most serious deficit of all: psychiatry, psychology, anthropology, etc., outside of the German-language orbit are nonexistent to the author; much valuable material has thus fallen by the wayside. Therefore, the book has remained somewhat sterile and is at present just as much a beginning as it was 30 years ago.

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LIFE STRESS AND BODILY DISEASE. Proceedings of the Association for Research in Nervous and Mental Diseases. (Baltimore: Williams and Wilkins Company, 1950. Price: \$15.00.)

This volume of 1,090 pages of text presents a most comprehensive anthology of clinical and laboratory studies of reactions of persons and organs in various situations and experimental conditions.

The subject matter of the 69 papers deals with the following: growth, development, and metabolism; mechanisms, specificity of bodily reactions; headache; diseases of the eye, gastrointestinal, cardiovascular systems; diseases of the joints, muscles, skin; genital disorders; "Life Stress and Bodily Disease—a Formulation" by the chairman of the symposium.

The papers, of course, vary in scope, interpretations of observations, and clarity of exposition. But all of them report largely the authors' own studies. In their totality, the contributions offer extraordinarily abundant material from which the reviewer has learned a great deal. The chairman's paper, the last one in the symposium, is particularly impressive by its comprehensive as well as illuminating exposé of the mechanisms involved in the effects of emotions on the function of organs and possibly in causing pathological structural changes. Dr. Wolff's leading idea is that the subjective feelings of the individual and his bodily reactions are defense reactions of adaptation to life stresses threatening his security. With this central idea Wolff discusses the protective reaction patterns to threatening situations, patterns involving the gastrointestinal, cardiovascular systems, skeletal muscles, nose and airways, metabolism, the individual coping with personal experiences and cultural pressures. In this discussion the author draws illustrative material abundantly from his numerous psychosomatic studies and from the literature. His attempt to integrate physiological and psychological reactions, the latter including conscious and postulated unconscious conflicts, is fully successful.

In contrast to its extremely enlightening content, the general title of the symposium is, in my opinion, imperfect: Having a dramatic quality, it is

the more apt to convey the unwarranted notion that "life stress" *per se* would commonly be a self-sufficient etiologic factor in bodily diseases. It is trite but true to state that no one goes through life without being subjected to some kind of more or less severe life stress. This applies to both conscious painful experiences and forgotten ones of early childhood. Yet, it is common knowledge that numerous psychoneurotics, who admittedly had been subjected to some life stresses in their childhood and had remained extremely sensitive to life stresses in adulthood, enjoy good physical health. Moreover, many of those psychoneurotics who do suffer from somatic disorders feel considerably, if not completely, relieved when forced to cope with a distressing life situation. This was unambiguously brought out also in Wolff's contribution. Neither does the title seem to be justified by the general content of the clinical material, inasmuch as the latter deals essentially with the specific relevance of emotions, and not of life stresses, to bodily diseases or bodily reactions.

It would therefore seem far more adequate to focus the reader's attention where it belongs, namely, to the role of emotions in somatic reactions.

These critical remarks about the title should not detract from the excellence of the content of the symposium, which offers a wealth of knowledge in the field of psychosomatic medicine.

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MODERN ABNORMAL PSYCHOLOGY. Edited by W. H. Mikesell. (New York: Philosophical Library, 1950. Price: \$10.00.)

This book, containing the contributions of 24 writers, has many of the advantages and suffers from the usual disadvantages in putting together the writings of many different people. One advantage is that each section is written by someone with special competence in his topic and who approaches the task with enthusiasm. The chief difficulty is the lack of continuity and the amount of repetition. No effort has been made to tie the material together, and as a consequence the reader is not presented with a progression, but rather with 25 separate articles. Since each author must develop the background for his message separately, repetition is unavoidable (at least 5 of the writers present the same historical facts).

There is no preface and it is therefore difficult to tell precisely what was the intended purpose. The publishers state that the book was designed to meet the interest of the general public in abnormal psychology as well as the needs of the student for a reference and source book. The first of these purposes has been admirably accomplished and, while there is to be found some reference material of interest to students, the material is more like that which may be found in textbooks of abnormal psychology. Certainly the advanced student in the abnormal field will be looking for more fundamental

source material. In some of the sections this source material is provided in the bibliography.

Seven of the sections are devoted to the meaning and causes of abnormality and the dynamics of the personality; 8 sections describe the neurotic and psychotic syndromes; 6 authors discuss therapy, 2 chapters are devoted to psychological testing, and there is 1 section on legal aspects.

The sections devoted to meaning and dynamics of personality include the following: normal and abnormal behavior, meaning and causes of mental diseases, maladjustment, the aggressive forms of the defense mechanisms, withdrawal forms of defense mechanisms, concepts of the unconscious, and disorders of perception and imagery. These sections in general provide a reasonable background for the understanding of dynamics. The articles on maladjustment and that on aggression by Mikesell and White deserve special commendation. They are clear and informative, and the bibliography on aggression is most satisfactory. It is in this section that the reader is most likely to find valuable reference material.

The sections dealing with disease syndromes include articles on the following topics: certain forms of neurosis, neurotic reactions in World War II, manic-depressive psychoses, mania-depression of famous men, schizophrenia, senile and involutional psychoses, psychopathic personality, and the psychology of drugs. These sections are roughly comparable to chapters bearing similar headings in textbooks with the exception of that written by Teply on mania-depressions of famous men, which contains material not otherwise available. The chapters appear to be directed more to the general reader than to the student and are clear and effectively written.

The material on psychotherapy and mental hygiene includes the following chapters: psychotherapy—outline of its history and present situation, psychosomatic medicine, suggestion and hypnosis, psychiatric treatment, the therapeutic value of psychoanalysis, and mental hygiene and the future. In these sections there is necessarily much repetition. Two of these chapters deserve special mention. Zilboorg's section on psychosomatic medicine is excellent for both the popular reader and the student of abnormal phenomena. The outline and history of psychotherapy by Grotjohn and Gode is splendid and contains a most satisfactory bibliography. Clear and concise, this chapter will be very valuable for those who do not intend to read such works as Zilboorg's full book on medical psychology. It provides a good short history of psychoanalysis though there will be those who will quibble about the lack of importance assigned to Adler. Perhaps it might better be considered a history of psychoanalysis than of psychotherapy since the work of Adolf Meyer and many others important to the development of psychotherapy has not been included.

The book also includes 2 chapters on abnormalities of intellect and psychological testing in a mental hospital.

This group of articles provides useful information on topics of modern abnormal psychology and

should be completely understandable by the general reader.

G. WILSON SHAFFER, PH. D.,
Homewood Schools,
Johns Hopkins University.

THEIR MOTHERS' SONS. Second Edition. By Edward A. Strecker, M.D. (Philadelphia: Lippincott, 1951. Price: \$3.50.)

The author and publisher have collaborated in bringing out a new edition of "Their Mothers' Sons," which was first published in 1946. A new chapter entitled "Out of Swaddling Clothes" has been added to the original text. In this Dr. Strecker calls attention to a suggestive parallel between the fairly universal Russian custom of swaddling children during the first year of life and the hostile dependent character traits observed in adults in that country.

The first edition of this book was the outgrowth of a lecture by the author at Bellevue Medical School in 1945, entitled "Psychiatry Speaks to Democracy." The wartime psychiatric casualty lists in the armed services and the psychiatric rejectee data were taken as a point of departure to demonstrate that adult character is markedly influenced by childhood experience with significant adults—that adults responding inadequately to stress situations suffer from old dependency problems in childhood. The author describes the basic mother-child relationship in terms of its potential for gradual freeing of the child for mature living and independent action—also for holding the child in emotional bondage through clinging and rejecting patterns in the mother. He then goes on to demonstrate that fathers, governesses, teachers (in fact anyone who becomes a significant figure in the child's life) have the same opportunity to influence the child's living patterns constructively or destructively.

He devotes several chapters to a discussion of alcoholism, homosexuality, and psychosis, showing that these too have significant roots in the same area. Four chapters that follow emphasize a socio-psychiatric orientation. There is one on dictatorships, another on progressive education, still another on what was a current topic in 1946, the returning veteran. All point up the areas in which dependency needs are encouraged or exploited, to the detriment of the individual or the group. Two chapters are devoted to the mental hygiene of child-parent relationships. The author has one chapter on the type of the popular "self-administered personality test" for determining "bad mother" characteristics in the reader. This I thought detracted considerably from the serious level at which the discussion of problems was carried on earlier in the book.

Dr. Strecker has oriented his book to the general reading public. It necessarily has oversimplified many of the problems. He has a highly readable, forceful style, and his illustrative material is clear and appropriately dramatic. The author states as his purpose the demonstration of the influence of

childhood experience on adult behavior. However, there is an implication throughout that people could solve all their difficulties in living, from personal to international, by just being sensible. It reduces psychiatry from a serious study of the irrational in human behavior, with some encouraging progress in ways of influencing this area, to a kind of religion of common sense.

REX E. BUXTON, M.D.,
Washington, D. C.

SOME SEX BELIEFS AND PRACTICES IN A NAVAHO COMMUNITY. By Flora L. Bailey. Papers of the Peabody Museum of American Archaeology and Ethnology, Harvard University, Vol. 40, No. 2. (Cambridge: Peabody Museum, 1950. Price: \$3.00.)

Under the direction of Clyde Kluckhohn the Ramah group of Navaho Indians have been subjected to intensive study by anthropologists, psychiatrists, and botanists. Bailey's is the second of a series of reports of the Ramah Project, which is a new approach in anthropological investigation. Anthropologists usually write reports on the culture of an ethnic group in which the facts are generalized and the author states that tribe "X" does thus or so. The Ramah project has as its theme the analysis of individual variation. Numbers of informants were interrogated upon each specific aspect of the main topic of investigation in order to secure insight into the range of expression of the trait. Dr. Bailey's study concerns the beliefs and practices pertaining to the reproductive cycle. At Ramah 42 informants between 16 and 80 years of age were interviewed systematically, and their replies form the core of data, but additional incomplete coverage for about 100 more Navaho is cited where relevant. A tabulation of replies to questions was prepared but with few exceptions not published, and the reader often wonders how many denials or affirmations of a specific question form the basis for one of Dr. Bailey's general statements. Perhaps such documentation is not essential, since this paper is not intended to be a Kinsey Report on the Navaho.

The data are presented both in the form of discussion, and as verbatim statements of informants. The following topics are considered: puberty, menstruation, conception and related aspects, contraception, pregnancy, childbirth, postnatal care of infant, care of postparturient woman, unusual births, abortion, infanticide. It is noteworthy that very considerable differences of opinion occur within this single, rather isolated Indian group in regard to most beliefs and practices. Knowledge of the structure and function of the reproductive organs is incomplete and inaccurate, though all the Ramah Navaho agree that intercourse is necessary for conception. It is believed that the sex of the unborn child can be foretold by the appearance of freckle marks on the mother's face. The length of the gestation period is known. Emotional disturbances increase in ratio to the number of pregnancies ex-

perenced, and large numbers of pregnancy restrictions and rules of behavior during pregnancy have the effect of alleviating this anxiety.

One criticism of the report is that it consists almost entirely of verbal replies to questions, and that no direct observation records of those aspects of the reproductive cycle that might have been visible to the ethnologist are presented. Thus the actual practices of the Ramah Navaho may or may not coincide with the verbal statements of the informants.

ROBERT F. HEIZER, PH. D.,
University of California.

SPEAKING OF MAN. By Abraham Myerson, M.D.
(New York: Alfred A. Knopf, 1950. Price: \$3.00.)

Abraham Myerson was a man unafraid. He saw clearly and spoke plainly. There was no mysticism about him such as sometimes befogs men even in the top ranks of science. This book may be regarded as his spiritual testament—if we may use this poetical phrase, to which he might object, to express the author's ultimate scientific, philosophical, and ethical views.

Publisher Alfred A. Knopf asked Myerson in December 1930 to write this work. The request struck a responsive chord since Myerson had been collecting material over the years, for what he hoped would be his final opus expressing his "mature point of view." But the demands of his daily work—the practice of neurology and psychiatry, teaching and lecturing, professional writing, conducting research—occupied him so fully that there was little time for this special task. He wrote and rewrote many sections of the book, but at his death in September 1948 it was still unfinished. We owe it to the skill of his daughters-in-law, Mildred and Edith Myerson, who assembled and arranged the material, that the present volume could be published.

It is an unusual book. It gives an honest picture of an unusual man and the workings of his mind. Through Myerson's many-sided nature ran a rich vein of humor, and there was acid in his humor when he pilloried the follies and foibles, the superstitions and stupidities of *homo credulens*—credulity, that master weakness of those who yearn to be led. He was a dyed-in-the-wool skeptic, but the kindest and most humane of skeptics who could still look forward to a possible day when "human need will evoke a combined trinity of Science, Good Will and Wisdom to make living worth while."

While berating senseless prejudices and baseless beliefs, whether medical, economic, philosophical, or theological, Myerson had the happy faculty of not taking himself too seriously either, "because I am perhaps a very prejudiced person and certainly a combative one." Combative he was, but he was also a fair fighter who nevertheless could not compro-

mise with authoritarianism, especially the authoritarianism of ecclesiastics and of "psychiatrists and near-psychiatrists who speak as if they had become the new agents of God." The following quotation illustrates his flexible mind:

"When I was a young psychiatrist, father of one child, I loftily developed a lecture entitled, no less: 'A Decalogue for Parents.' Like a new Moses I enunciated ten commandments based on the successful rearing of son number one. Along came son number two, a nonconformist, who shattered my feelings of certainty. I changed the title of the lecture to 'Ten Hints for Parents.' With this modification of authoritarianism I got along well enough until the third child was born, a girl; then I gave up the lecture entirely."

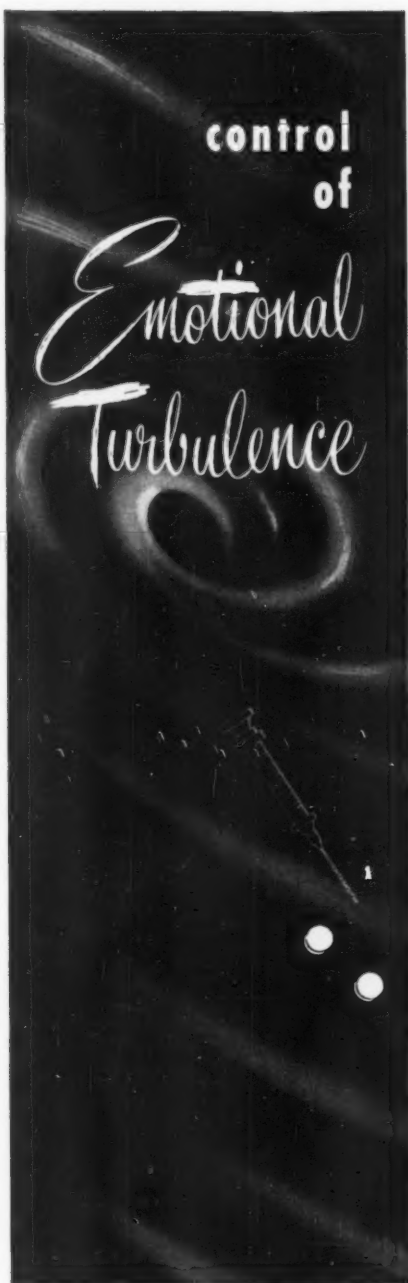
During the last year of his life, having detailed awareness of the nature of his illness, and of the fact that his days were numbered, Myerson wrote in the prelude to this book some of his most memorable words. From youth-time on, he tells us, he had "read ardently of theology, philosophy, the history of man, and the history of his beliefs. I gave up religion and philosophy quite completely during the years of my young manhood, maturity, and middle life." And now, while near the end of the road, "I thought I would go back to the reading of my youth and see whether my skepticism and rejection of absolutes of any and all kinds could change, now that old age and sickness had descended upon me. I did not crave consolation; I felt no fear that needed assuagement; and I had no yearning for immortality that demanded faith in God and a future life. I read, and I read, and I read—religion and the history of religion, philosophy and the lives of the philosophers, the new and the great of recent science, and the scientists who try to reconcile religion and science. I came out of this debauch of reading as unregenerate as I went in. . . . Sooner or later, I am to disappear as an entity and reenter the cycle, in fragments that do not include consciousness and a soul. The why of life and death completely eludes me and, I believe, eludes even those who proclaim their transcendent ability to know it."

How many of us, when the final shadows gather, could display such undaunted spirit and speak such fearless words?

Yes, Myerson was a rare personality. His book is salutary reading for laymen and professionals alike—especially professionals. His friend, Alfred Knopf, said, "He was one of the half-dozen most remarkable men I have ever known." One can understand that. To have known him and been one of his friends is a distinction and an abiding and cherished memory.

The value of this book is greatly enhanced by a vivid biographical sketch of the author by Mildred Ann Myerson.

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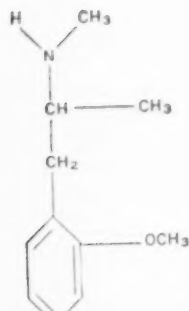
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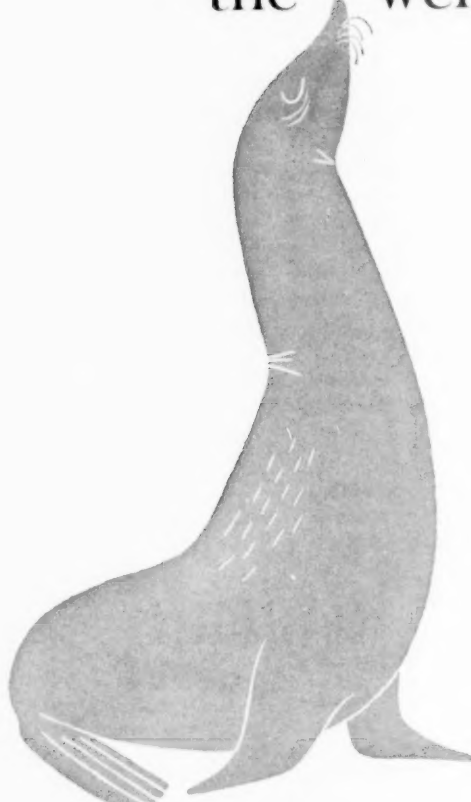
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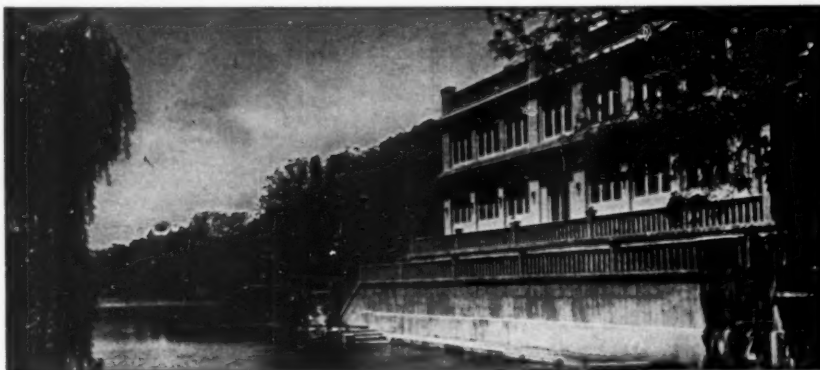
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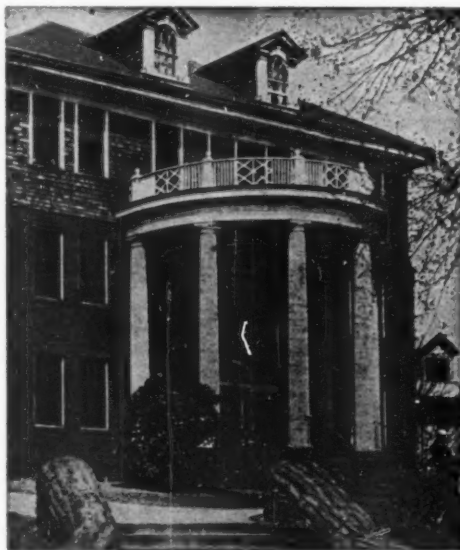
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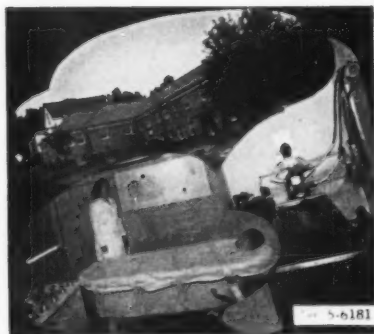
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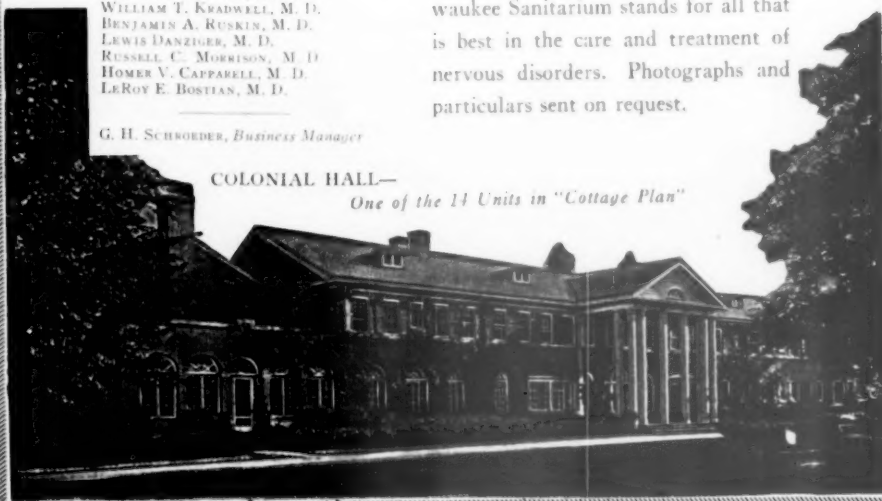
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